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ABSTRACT

This report contains two chapters addressing two topics: (1) the rates at which students initially enroll in postsecondary vocational education, accumulate credits, and complete a certificate or degree; and (2) the state allocation of federal funds to secondary and postsecondary levels of vocational education. The first chapter presents descriptive data on postsecondary enrollments of students engaged in vocational and academic studies, particularly in two-year and other nonbaccalaureate institutions. For different groups of students, the chapter describes rates of entry, amounts of course work taken, and rates of completion of certificate or degree programs. The results reported are based on the transcripts of nationally representative samples of persons who graduated from high school in 1972 and 1980. Comparison of the classes of 1972 and 1980 allows the determination of trends in enrollment and rates of completion among different groups of students, and the use of transcripts provides an accurate description of the mix and concentration of course work taken by students. The second chapter reports how states allocate grant funds from Title II of the Carl D. Perkins Vocational Education Act to secondary and postsecondary education, the spending of federal funds for disadvantaged and handicapped students, state funding of vocational education, and state standard-setting for vocational education. (KC)

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Second Interim Report
to Congress

NATIONAL ASSESSMENT OF VOCATIONAL EDUCATION

U.S. Department of Education

September 9, 1988

Additional copies of this report can be obtained from the National Assessment of Vocational Education, U. S. Department of Education, 400 Maryland Avenue, SW, Room 3141, Washington, DC, 20202.

Second Interim Report

NATIONAL ASSESSMENT OF VOCATIONAL EDUCATION
EXECUTIVE SUMMARY

The second interim report of the National Assessment of Vocational Education is hereby submitted to Congress as required by Section 403 of the Carl D. Perkins Vocational Education Act of 1984 (PL 98-524).

The report contains two chapters addressing two important topics: (1) the rates at which students initially enroll in postsecondary vocational education, accumulate credits, and complete a certificate or degree; and (2) the state allocation of federal funds to the secondary and postsecondary levels.

The next report to be submitted is the final report. It will contain all the major findings and recommendations of the National Assessment from more than 20 separate studies.

POSTSECONDARY VOCATIONAL EDUCATION ENTRY, EXIT AND ACHIEVEMENT

The first chapter presents descriptive data on postsecondary enrollments of students engaged in vocational and academic studies, particularly in two-year and other nonbaccalaureate institutions. For different groups of students, the chapter describes rates of entry, amounts of course work taken, and rates of completing a certificate or degree program. The primary focus is on students engaged in vocational studies in community colleges, technical institutes, and private vocational schools.

The results reported are based on the transcripts of nationally representative samples of persons who graduated from high school in 1972 and 1980. Comparison of the Classes of 1972 and 1980 allows the determination of trends in enrollment and rates of completion among different groups of students. The use of transcripts provides an accurate description of the mix and concentration of course work taken by students.

Entry: Enrollments in Postsecondary Vocational Education

- Roughly the same percentages of the Classes of 1972 and 1980 enrolled in some form of postsecondary education within four years after graduation from high school (61.7 and 60.3 percent, respectively).

- Within four years of graduation, 35.5 percent of the Class of 1980 entered a four-year college, 19.4 percent entered a community college, 3.6 percent attended a public technical institute, and 2.4 percent attended a private vocational school.

- The proportion of the Class of 1972 enrolling in vocational programs at these institutions increased from 14.8 percent for the Class of 1972 to 17.9 percent for the Class of 1980.

- Enrollment increases in vocational education programs were greatest among women, students from lower socioeconomic groups, and students who took substantial amounts of vocational education in high school.

- Nonbaccalaureate institutions--community colleges, public technical institutes and private vocational schools--drew roughly equal numbers of students from all socioeconomic backgrounds and levels of high school achievement. Disproportionately more students in four-year colleges came from higher socioeconomic backgrounds, had better grades in high school, and took more of their high school courses in academic rather than vocational areas.

- For the Class of 1980, about 35 percent of the credits earned by students attending postsecondary institutions were in vocational subjects, 61 percent were in academic fields, and 4 percent were in remedial or avocational subjects.

- Institutions vary widely in the balance they offer between academic and vocational curricula. At community and four year colleges, vocational credits account for one-third of the total number of credits earned. At explicitly vocational schools, such as public technical colleges and private vocational schools, 70 percent of credits taken by the Class of 1980 were in vocational subjects.

Exit: Degrees and Certificates

- Four years after high school graduation, 11.2 percent of the Class of 1980 had completed a bachelor's degree, 5.9 percent had completed an associate degree, and 1.9 percent had completed a certificate. Another 19 percent were still in postsecondary education, 23 percent had left school before obtaining a credential and 39 percent did not enter postsecondary education. Among students who entered postsecondary education, the completion rate was 30.9 percent.

- Compared with the Class of 1972, a greater proportion of the Class of 1980 received vocational associate degrees and a smaller proportion received bachelor's degrees.

- Students graduating from a community college or public technical institute with an associate degree are equally likely to come from all socioeconomic backgrounds. In contrast, there is a close relationship between socioeconomic status and the likelihood of attaining a bachelor's degree. Good performance

in high school and general ability increase the likelihood of completing all types of degrees.

- Students from the Class of 1980 who earned vocational associate degrees from community colleges accumulated an average of 75 credits, including 41.5 vocational and 29.2 academic credits. Students earning academic associate degrees completed an average of 70 credits, with 49 academic credits and 15 vocational credits.

- Students from the Class of 1980 earning vocational associate degrees from public technical institutes accumulated an average of 86 credits, 54 of which were vocational and 29 academic. Certificate holders earned about 45 credits, with three times as many vocational as academic credits.

- More than 80 percent of the students earning vocational associate degrees from a community college or technical institute completed an occupational concentration by earning more than 18 credits in at least one vocational area. About 75 percent of certificate holders completed more than 18 credits in at least one vocational area.

Exit: Nondegree Students

- After entering postsecondary education, 37.6 percent of the students in the Class of 1980 left school within four years without receiving a degree or certificate. This exceeded the proportion of postsecondary students (30.9 percent) that received a certificate or degree in the same four years.

- Half the recent high school graduates who entered community colleges, public technical institutes, or private vocational school and 28 percent who entered four-year colleges left before completing a degree or certificate.

- Rates at which students failed to earn a degree or certificate were higher for the Class of 1980 (37.6 percent) than for the Class of 1972 (29.8 percent).

- More than 40 percent of the members of the Class of 1980 who left public two-year colleges, public technical institutes, or private vocational school without receiving a degree earned fewer than 13 credits in total.

- For both the Classes of 1972 and 1980, rates of leaving before completing a degree or certificate were the same for vocational and academic students attending community college.

- Members of the Class of 1980 who left postsecondary education without obtaining a credential earned an average of 23 credits in community colleges,

25 credits in technical institutes, and 39 credits in four-year colleges. These averages amount to approximately one-third the average number of credits earned by students attaining an associate or a bachelor's degree in their respective institutions.

- Low socioeconomic status is related to the likelihood of leaving all types of institutions without a credential, but the relationship is strongest in four-year institutions.

- More than 80 percent of the vocational students attending nonbaccalaureate nstitutions who left postsecondary education without obtaining a credential also failed to earn more than 18 credits in at least one vocational area.

The final report of the National Assessment will present information examining the extent to which the total credits earned by students, their concentration in areas of study, and the completion of a degree or certificate are related to jobs and earnings.

STATE POLICIES IN VOCATIONAL EDUCATION

Federal policy for vocational education delegates to states much of the responsibility for deciding how policy should be implemented and funds allocated among school districts and postsecondary institutions. A survey of the states conducted for the National Assessment by the National Center for Education Statistics, provides descriptive information on the allocations made by states between the secondary and postsecondary sectors, the rates at which districts and institutions have spent all of the federal funds they have received, and the prevalence of other state influences on vocational education. The findings reported here will be augmented in future reports with information from a series of case studies at the state and local levels and a survey of the districts and postsecondary institutions.

State Allocations of Perkins Title II Grant Funds to Secondary and Postsecondary Education

- Nationally, 40 percent of Title II funds were allocated to postsecondary education. This figure is larger than some previous estimates had indicated.

- One reason we obtained a higher figure is that we defined postsecondary education as education beyond grade 12. This definition encompasses adults enrolled in community colleges and technical schools as well as those enrolled in area vocational schools and adult education programs of secondary school systems.

- The proportion of federal funds allocated to postsecondary education varied

among states from 8 percent to 100 percent.

- The variation among states was broad even within the disadvantaged and handicapped set-asides of the Basic Grant program, where the allocation of funds to recipients is governed by a federally specified formula. Among the states, some allocated all and some allocated none or almost none of their federal funds under these set-asides to postsecondary education.

- The proportion of funds allocated to postsecondary education was significantly higher among states in the central and western regions than in the northeastern and southeastern regions for all the Perkins Title II categories--including the disadvantaged and handicapped set-asides, the adult and sex equity set-asides, the single parent/homemaker set-aside, and program improvement.

- Fifty-four percent of the states predetermined the proportion of federal funds to be allocated to postsecondary education before applying the federally specified intrastate formula. These states allocated an average of 33 percent of their disadvantaged set-aside funds to postsecondary education, compared with 24 percent in other states.

- While predetermining the amount of disadvantaged set-aside funds allocated to secondary and postsecondary education appears to result in more funds to the postsecondary level, allocations under the intrastate formula do little to redirect overall Perkins resources to either level.

Methods Chosen by States to Allocate Perkins Funds

- Among formula, competition and other discretionary means, at least two-thirds of the states used only one method to allocate funds for the adult, single parent, sex equity and corrections set-asides at both the secondary and postsecondary levels. Only in the program improvement category did most states use multiple methods to allocate funds.

- Competition and other discretionary means were the most common methods used by states to award funds at the secondary and postsecondary levels for all Perkins categories not covered by the intrastate formula.

- Formula methods were used most often by larger states and by states in the northeastern and southeastern regions.

The Spending of Federal Funds: Disadvantaged and Handicapped Set-Asides

- In the program year 1986-87, 34 percent of eligible recipients (school districts and postsecondary institutions) were unable to spend all the funds received

under the handicapped set-aside and 36 percent under the disadvantaged set-aside. Thirteen percent of the funds received by eligible recipients were unspent under the handicapped set-aside and 17 percent under the disadvantaged set-aside.

- The percentage of eligible recipients that received funds under the handicapped and disadvantaged set-asides differed by region. Roughly two-thirds of eligible recipients received grants in the northeastern, central and western regions, whereas for the Southeast the figure was 92 percent.

State Funding of Vocational Education

States exercise authority for vocational education beyond that established by federal law through a variety of means.

- Ninety percent of the states had some sort of direct state funding for ocational education at the secondary level in 1988. Thirty-eight percent of states had categorical aid intended explicitly for matching federal support.

Setting Standards for Secondary Vocational Education

States also influence local practices by setting various curriculum standards.

- More than half the states had established minimum hours of instruction for completing a wide range of occupational programs.

- Forty-five percent of the state had minimum sequences of courses for completing a wide range of occupational programs.

- Eighty percent of the states reported that they reviewed the content of vocational education courses at the state level.

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PREFACE

Section 403 of the Carl D. Perkins Vocational Education Act of 1984 (P.L. 98-524) calls for a national assessment of vocational education to be conducted by the Department of Education. The legislation mandates that "descriptions and evaluations" of vocational education shall be provided in nine areas:

- The vocational education services being delivered to special populations.
- The act's effects in helping the nation's vocational education system to modernize to meet the changing needs of the workplace.
- The resources needed to meet the nation's job training needs.
- The effects of vocational programs on the academic skills and employment opportunities of students.
- The coordination of vocational education programs with employment and training and economic development activities in the states.
- The skills and competencies developed by states to assess their vocational programs.
- The effectiveness of vocational education programs for persons with limited proficiency in English.
- The effectiveness of the federal bilingual vocational program.

To carry out this mandate, the Department of Education established the National Assessment of Vocational Education (referred to in this report as the National Assessment, or NAVE) to conduct "independent studies and analysis." The legislation requires the submission of two interim reports and a final report. The final report is due January 1989.

More than 20 separate research studies have been planned by staff of the National Assessment in response to the congressional mandate. Plans for these projects can be found in part II of the first interim report dated January 1988 and the original study plan submitted in December 1986.

This volume is the second interim report to Congress, as required by section 403. It contains three chapters presenting the findings from three of the planned projects. Each chapter is a self-contained report on one of the projects with its own introduction, findings, and conclusions.

Chapter 1 presents a comprehensive analysis of the extent of enrollment in postsecondary vocational education by recent high school graduates and the rates at which students complete certificate or degree programs. The analysis is based on the transcripts of nationally representative samples of postsecondary students and is the first to consider all students entering postsecondary vocational

programs--both completers of degrees and certificates, and the large number of students who leave school without earning a credential. Chapter 2 gives basic information on the state allocation of federal funds to the secondary and postsecondary levels among different categories of the Perkins Act and the funding methods chosen by states to distribute federal funds to local recipients. It uses results from a fast response survey of the states conducted for the National Assessment by the National Center for Educational Statistics. Chapter 3 is an analysis of the contributions of different kinds of secondary vocational education courses to students' math achievement. The effects on math achievement of different amounts and mixes of vocational education course work are compared with different combinations of course work in applied and regular mathematics.

An external Advisory Panel to the National Assessment of distinguished educators, public policy analysts, administrators, and research experts met on June 20, 1988, to review the contents of this report. Members of the panel are listed on the facing page.

This report was written by staff of the National Assessment on the basis of research carried out by contractors. David Goodwin is the author of chapter 1, Lana Muraskin wrote chapter 2. Karen Wilmer typed the text and prepared the data tables. Priscilla Taylor edited the manuscript.

John G. Wirt, Director
National Assessment of Vocational Education
September 1988

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Chapter 1

POSTSECONDARY VOCATIONAL EDUCATION: ENTRY, EXIT, AND ACHIEVEMENT[1]

INTRODUCTION

Enrollments in postsecondary education expanded enormously during the 1960s and mid-1970s. Community colleges and state colleges grew particularly fast. Groups that had been poorly represented in postsecondary education in the past--lower-income students, minority students, and women--came to college in greater numbers, helped by federal grants and loans and by the growth of community colleges with low tuition, open admissions policies, and geographic proximity.

One consequence of these changes was substantial growth in vocational education at the postsecondary level in all types of institutions. In community colleges the growing proportion of students opting for vocational studies in part accounted for declines in the number of students transferring to four-year colleges.[2] Enrollments in explicitly vocational training institutions--namely, technical colleges and proprietary schools--also grew. Even in four-year colleges, the increasing proportion of students in professional fields such as business, education, and engineering gave these institutions a more vocational cast.

The purpose of this chapter is to present descriptive data on enrollments of students engaged in vocational and academic studies at the postsecondary level, especially two-year institutions. For different groups of students, the chapter presents basic findings on rates of entry, amounts of course work taken, and rates of exit or program completion. The primary focus is on students engaged in vocational studies in community colleges, technical institutes, and private vocational schools.

The reader is cautioned against drawing premature conclusions about the value of the occupational training provided. Additional research currently under way at the National Assessment will report on training-related placements and the economic payoffs of postsecondary vocational education. By measuring job placements and earnings, this research will determine whether certain patterns of course taking result in greater usage of skills and earnings than others.

The results presented here are drawn from two nationally representative data sets: High School and Beyond (HS&B Seniors, 1980) follows the high school graduating class of 1980, whereas the

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[1]This chapter is based on a study done for the National Assessment of Vocational Education by W. Norton Grubb of MPR Associates, Berkeley, California.

[2]Declines in the rate of transfer from two-year to four-year colleges have occurred among all groups of students, not simply those in vocational studies.

National Longitudinal Study of the Class of 1972 (NLS-72) follows the high school graduating class of 1972. The results presented on enrollments come from postsecondary transcripts available in these data sets. Comparing the results for two high school classes indicates trends in postsecondary education. HS&B Seniors, 1980, contains postsecondary transcript data for the first four years after high school, and NLS-72, for seven years. When groups of students are compared in this chapter, only data on the first four years after high school graduation are used. Data on NLS-72 seniors after seven years, however, provide additional information on the postsecondary enrollment patterns of students and are presented separately.

Because the data sets include college transcripts of individual students' postsecondary education, the results are drawn from official records about the amount and type of education and credentials received. It was not necessary to rely on student self-reports.

One limitation of this study is that it does not present a complete profile of all students in postsecondary institutions. Specifically, the data do not contain information on older students who enter postsecondary education for the first time more than seven years after their graduation from high school. Much of the growth in postsecondary enrollments, especially in vocational programs, is said to come from such older students. The patterns of course-taking and program completion of these older students may or may not be the same as the patterns among students who enter for the first time within seven years of graduation from high school.

To assess the extent to which older students enrolled in postsecondary education differ from traditional students, we compared course-taking patterns of older and younger students using the National Postsecondary Student Aid Survey (NPSAS). Unlike HS&B Seniors, 1980, and NLS-72, this data base contains a representative sample of all students enrolled in postsecondary education during the 1986-87 school year. In brief, the results presented in table 1 indicate that community colleges, proprietary schools, and public vocational-technical colleges do indeed enroll a much higher proportion of older students than do four-year colleges, but although younger students enroll for slightly more credits than older students, the difference is not substantial. These findings indicate that HS&B Seniors, 1980, and NLS-72, although limited to recent high school graduates, present a reasonable overall picture of enrollments in postsecondary vocational education and other programs.[3]

For purposes of this study, vocational students were defined as those who earned a majority of credits in vocational areas during their first semester in postsecondary education. Students who entered

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[3]Another characteristic of the study is that it focuses on the postsecondary education of high school graduates. It does not include high school dropouts who may later attend college. Because most dropping out of high school occurs prior to the senior year, when HS&B Seniors, 1980, and NLS-72 data were initially collected, postsecondary transcripts contain very few cases of people who did not complete high school. Additional research undertaken by the National Assessment will report on training received by high school dropouts in college and elsewhere.

Table 1-1

Percentage of Postsecondary Undergraduate Enrollments and Credits by Age, for all Students Enrolled in Postsecondary Education, 1986-87

	Ages 15-25		Age 26 and Older	
	Total Enrollments	Total Credits	Total Enrollment	Total Credits
All postsecondary Institutions	71.2%	78.7%	28.9%	21.3%
Public two-year	55.9	62.1	44.1	37.9
Public technical	50.0	56.6	50.0	43.4
Private Vocational	64.4	71.5	35.6	28.5
Public four-year	82.1	86.4	17.9	13.6
Private four-year	81.7	87.4	18.3	12.6

Source: National Postsecondary Student Aid Survey (NPSAS).

technical institutes and private vocational schools were assumed to be vocational students.

Courses were classified into vocational and academic areas according to a taxonomy of postsecondary courses. Courses were divided into three categories: vocational, academic, and remedial/avocational. The vocational category encompassed courses in 10 areas: agriculture, business and management, marketing and distribution, health care, occupational home economics, trades and industry, technical and engineering, education, public service, and communications. This taxonomy is a straightforward extension of the one developed by the National Assessment to analyze secondary school courses, which was described in the first interim report, dated January 1988. The main additions to the secondary taxonomy were engineering, education, and public service fields, which are unique to postsecondary education. The taxonomy covers courses offered in two-year as well as four-year institutions. The postsecondary course classification is fully described in appendix A.

For purposes of this analysis, types of postsecondary institutions are distinguished as follows:

Public two-year colleges, or community colleges, are comprehensive institutions offering programs in both academic and vocational subject areas. These institutions typically grant both two-year associate degrees and certificates.[4]

Public technical institutes include two-year technical colleges as well as some one-year institutes that specialize in vocational subjects. Area vocational schools are included among this group because they provide vocational programs for adults. These institutes grant both associate degrees and certificates.

Private vocational schools are profit-making (proprietary) and nonprofit institutions that provide training and education in particular occupational areas. They include schools that specialize in cosmetology and barbering, business and secretarial training, health care, and other trades and technical areas. These institutions grant mainly certificates.

Four-year colleges are public and private educational institutions that grant bachelor's degrees in vocational and academic areas. Some also grant small numbers of associates degrees and certificates.

Private junior colleges are private, nonprofit two-year colleges, most of which emphasize academic programs. These institutions are omitted from most of the analyses, because their enrollments are very small.

ENTRY: ENROLLMENTS IN POSTSECONDARY VOCATIONAL EDUCATION

Highlights

- **High school seniors from the Class of 1980 were only marginally more likely to enroll in postsecondary education (61.7 percent) than were high school seniors from the Class of 1972 (60.3%). However, the proportion of the Class of 1980 that entered vocational programs (37.9 percent) was substantially larger than the proportion of the Class of 1972 (32.4 percent).**

- **A total of 35.5 percent of the Class of 1980 entered four-year colleges, 19.4 percent entered two-year public colleges, 3.6 percent entered public technical institutes, and 2.4 percent entered private vocational schools. Enrollment increases occurred primarily in community colleges, private vocational schools, and public technical institutes.**

- **The proportion of students enrolling in vocational programs at these institutions increased from 14.8 percent of the Class of 1972 to 17.9 percent of the Class of 1980.**

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[4]There are various types of associate degrees: Associate in Arts (A.A.), Associate in Science (A.S.), and Associate in Applied Science (A.AS.). The A.AS. corresponds to what we have termed a vocational associate degree; the A.A. refers to an academic associate degree; depending on area of specialization, the A.S. may be either vocational or academic. Types of associate degrees awarded may vary among states. Institutions also award certificates, which may be in a wide variety of occupational areas. Certificates require less total course work and have fewer distribution requirements than associate degrees.

Increases in postsecondary vocational enrollments were greatest among women (+4.6 percent), students from lower socioeconomic groups (+4.8 percent), and students who had taken substantial vocational education in high school (+7.6 percent).

- **Nonbaccalaureate institutions, especially community colleges and technical institutes, drew equal numbers of students from all socioeconomic backgrounds and levels of high school performance. Students who went to four-year colleges came disproportionately from high socioeconomic backgrounds, had better grades in high school, and took more of their course work in academic rather than vocational areas of the high school curriculum.**

- **For the Class of 1980, about 35 percent of all credits earned by students attending postsecondary institutions were in vocational subjects, 61 percent were in academic fields, and 4 percent were in remedial/avocational subjects.**

- **Among students from the Class of 1980 attending nonbaccalaureate institutions, community colleges accounted for 61 percent of the vocational credits earned.**

- **Institutions vary widely in the balance between academic and vocational curricular. At community and public four-year colleges, vocational subjects accounted for one-third of all credits earned by students from the class of 1980. At explicitly vocational schools, such as public technical institutes and private vocational schools, 70 percent of credits were taken in vocational subjects.**

- **Nearly 40 percent of students from the Class of 1980 who entered community colleges earned fewer than 25 credits within four years of high school graduation; 37 percent of those attending public technical institutes earned fewer than 25 credits.**

- **Minority students earning associate degrees are substantially less likely than other students to major in math, science, or technology and engineering or to earn a substantial number of credits in these fields.**

Postsecondary Enrollment Trends

Overall enrollments in postsecondary education have been relatively stable over time. As table 2 indicates, 60.3 percent of graduates in the Class of 1972 entered postsecondary education, including two-year, four-year, and other institutions. The percentage increased only slightly--to 61.7 percent--for the Class of 1980.

But within this overall level, there have been some important shifts. Enrollments at two-year colleges, technical institutes, and private vocational schools increased from 23 percent to 25.4 percent of high school graduates, while enrollments at four-year colleges declined slightly. Within two-year colleges, the rates of enrollment in vocational programs increased, whereas initial enrollments in academic programs actually dropped. Similarly, students from the Class of 1980 who entered four-year colleges enrolled in vocational programs at a greater rate than students from the Class of 1972 (56 percent of the Class of 1980 who entered four-year institutions, compared with 49 percent of the Class of 1972.)

There have also been several important trends for particular subgroups. Fewer women than men in the Class of 1972 went on to postsecondary education; this pattern was reversed in the Class of

Table 1-2

Distribution of High School Graduates Entering Postsecondary Education Within Four Years, Classes of 1972 and 1980 (Percentage)

	Class of 1972	Class of 1980
Type of Institution:		
Any postsecondary education (Total)	60.3%	61.7%
Public two-year colleges	18.1	19.4
Vocational	9.9	12.1
Academic	8.2	7.3
Public technical institutes	2.9	3.6
Private vocational schools	2.0	2.4
Four-year colleges	36.1	35.5
Vocational	17.6	19.8
Academic	18.5	15.7
Private junior colleges	1.1	0.4
Student characteristics:		
Male	63.3	59.3
Female	57.2	64.1
White	61.7	62.7
Black	55.9	57.3
Hispanic	50.1	55.3
Low SES	39.6	43.3
High SES	83.9	83.1
Low ability (in high school)	32.8	35.9
High ability	83.2	84.9
Academic program (in high school)	84.3	84.1
Vocational program	32.1	42.5
General program	48.6	51.2
Educational aspirations (in high school)		
High school only	13.8	13.9
Vocational certificate	41.9	42.0
Associate degree	71.6	67.1
Bachelor's degree	90.2	87.0
Postgraduate degree	90.2	88.6

Source: National Longitudinal Survey of the High School Class of 1972 (NLS-72) and High School and Beyond (HS&B) Seniors, 1980.

1980, with 64.1 percent of women continuing to postsecondary education compared with 59.3 percent of men. Increases in enrollments were evident for Hispanics, for students of low socioeconomic status (SES), for students of low ability, and for students who reported enrolling in the general or vocational programs while in high school.[5]

Significantly more of the students from the Class of 1980 than from the Class of 1972 who characterized themselves as vocational students in high school decided to continue on to postsecondary education. This is consistent with National Assessment findings in the first interim report that students aspiring to some form of postsecondary training accounted for nearly three-quarters of all vocational courses taken at the high school level by the Class of 1982. The data in table 2 show that although high school vocational students (self-reported) were less likely to enroll in postsecondary education than students in the academic or general programs, the probability of their going on to postsecondary education has increased markedly.

Comparison of total enrollments in nonbaccalaureate and baccalaureate institutions shows important differences in the kinds of students each attracts. The nonbaccalaureate institutions as a group--two-year colleges, technical institutes, and private vocational schools--drew equal numbers of students from all socioeconomic backgrounds and levels of educational ability. As indicated in table 3, students at these institutions were just as likely to be from the highest socioeconomic quartile as from the lowest socioeconomic group. Students in nonbaccalaureate institutions were also nearly as likely to have been "academic" as "vocational" students in high school, at least according to their self-report. Similarly, there were no systematic or consistent differences in overall enrollments at these institutions among students of different ability levels, students from different high school programs, or students whose high school grades varied widely.[6] Nonbaccalaureate institutions have in these respects fulfilled their goal of providing open admissions to all students who wish to enroll, particularly those students having few other places to further their education beyond high school. Four-year colleges, in marked contrast,

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[5]Socioeconomic status is a composite variable based on parents' education, father's occupation, family income, and responses to questions about whether the family owned various items (e.g., dishwasher, color TV, encyclopedia,).

The ability variable is a composite of various test scores. In NLS-72, high school students were tested on vocabulary, reading, letter groups, mathematics, and mosaic comparisons. For HS&B Seniors, 1980, students were tested on reading, math, and vocabulary. This variable should probably be considered a measure of high school achievement rather than ability.

The measure of high school program used in this chapter is the student's self-reported program. As discussed in the National Assessment's first interim report, self-reported program is often poorly related to actual high school course-taking patterns. Nonetheless, it is a strong predictor of postsecondary enrollments. Also, no high school transcript data were collected for the HS&B Seniors, 1980.

[6]There are, of course, some differences among nonbaccalaureate institutions. Of particular note is the sharp drop in enrollments at private vocational schools and public technical institutes among students from the highest socioeconomic quartile and the highest ability quartile (table 5).

Table 1-3

Distribution of High School Graduates Entering Nonbaccalaureate and Baccalaureate Institutions, Class of 1980 (Percentage)

Characteristics	All High School Graduates (1)	All Postsecondary Education[a] (2)	Nonbaccalaureate Institutions[b] (3)	Four-Year Colleges (4)
All students	100.0%	61.7%	26.9%	35.5%
SES quartile				
I (Low)	24.1	43.3	22.4	20.0
II	25.3	53.1	27.8	25.4
III	24.8	68.1	30.8	37.6
IV (High)	25.8	83.1	23.2	59.9
Ability quartile				
I (Low)	23.1	35.9	24.9	11.1
II	25.0	53.4	29.5	22.8
III	25.5	71.6	30.8	40.8
IV (High)	26.5	84.9	11.5	66.4
High school grades[c]				
Low	18.5	34.0	23.6	11.1
High	34.6	79.0	21.9	66.4
High school program				
Academic	39.2	84.1	21.2	62.9
Vocational	24.7	42.5	31.2	11.3
General	36.1	51.2	28.0	23.2
Educational aspirations (in high school)				
High school only	18.7	13.9	11.3	2.6
Vocational certificate	18.9	42.0	35.0	7.0
Associate degree	15.2	67.1	47.8	19.5
Bachelor's degree	25.6	87.0	25.2	61.9
Postgraduate degree	21.5	88.6	18.0	70.7

Source: HS&B Seniors 1980.

[a]Figures in columns 3 and 4 may not equal totals in column 2 because of rounding.

[b]Nonbaccalaureate institutions are public two-year colleges, public technical institutes, private vocational schools, and private junior colleges.

[c]Low grades refers to students who reported receiving mostly C's and D's; high grades refers to students who received mostly A's and B's.

were more likely to enroll students who have higher socioeconomic backgrounds, have the best high school grades, and took most of their courses in the academic program of the high school.

Educational aspirations of students are strongly related to overall postsecondary enrollments and to the kinds of institutions students attend. Not surprisingly, students with limited educational aspirations are less likely to enroll in postsecondary education than are students aspiring to earn at least a bachelor's degree, and those that do enroll are most likely to attend schools offering the types of programs that meet their goals--community colleges, technical institutes, and proprietary schools. As indicated in table 3, approximately one-third of all high school graduates in the Class of 1980 aspired to earn a vocational certificate or associate degree. Only 42 percent of those seeking a vocational certificate actually entered postsecondary education, and over 80 percent of those students entered nonbaccalaureate institutions that offered the programs they sought. Similarly, 70 percent of those students who aspired to an associate degree initially entered a nonbaccalaureate institution--most frequently, a community college.

Trends in Vocational Education Enrollment

Substantially more--21 percent more--graduates from the Class of 1980 enrolled in vocational education at community colleges, technical institutes, and private vocational schools than did graduates of the Class of 1972. Table 4 shows that whereas 14.8 percent of graduates from the Class of 1972 enrolled in postsecondary vocational education, 17.9 percent from the Class of 1980 did. Increases in postsecondary vocational education were distributed among all groups in the population, but were most pronounced among the groups with increased access to postsecondary education overall. These groups include women--many of whom enrolled in business and health care programs--as well as students from lower socioeconomic backgrounds and students who reported they were in a vocational program in high school.

The data in table 4 clearly show that much of the growth of vocational enrollments in nonbaccalaureate institutions has come from increased numbers of secondary school vocational students who decided to continue their vocational education at the postsecondary level rather than stop at the high school level. The proportion of high school vocational education students going on to postsecondary vocational education increased from 17.0 percent in 1972 to 24.6 percent in 1980. In contrast, the proportion of academic students and general students who enrolled in vocational education at the postsecondary level remained essentially the same for the two classes. This growth suggests the importance of efforts under way in the states to articulate the relationship between vocational curriculum in secondary and postsecondary institutions.

Table 5 provides data on the composition of students enrolled in postsecondary vocational education. The results closely parallel previous results on overall enrollments at nonbaccalaureate

Table 1-4

Distribution of High School Graduates Entering
Postsecondary Vocational Education in Public Two-Year Colleges,
Technical Institutes, and Private Vocational Schools,
Classes of 1972 and 1980
(Percentage)

Student Characteristics	Class of 1972	Class of 1980
All students	14.8%	17.9%
Male	14.9	16.4
Female	14.7	19.3
White	14.8	17.9
Black	13.3	15.8
Hispanic	18.4	21.6
Low SES	13.7	18.5
High SES	12.4	13.5
Low ability (in high school)	15.0	18.8
High ability	9.5	11.3
Academic program	12.2	13.2
Vocational program	17.0	24.6
General program	16.7	18.2
Education aspirations (in high school)		
High school only	6.7	9.3
Vocational certificate	26.8	28.9
Associate degree	36.2	34.7
Bachelor's degree	9.4	13.2
Postgraduate degree	6.6	9.2

Sources: NLS-72 Seniors and HS&B Seniors, 1980.

institutions. The table indicates that vocational students at the postsecondary level represent a broad cross section, by race, sex, ability, socioeconomic background, and aspirations, of all 1980 high school graduates in the population. Although vocational programs may not attract so many students from the highest ability levels (as measured in high school) or students aspiring to earn a baccalaureate, these

Table 1-5

Distribution of Students Entering
Postsecondary Vocational Education, Class of 1980

	High School Graduates	Vocational Students, Public Two-Year Colleges	Students in Technical Institutes	Students in Private Vocational Schools	All Postsecondary Vocational Students
Men	49.3%	46.7%	52.5%	27.3%	45.3%
Women	50.7	53.3	47.5	72.7	54.7
White	80.8	80.9	82.5	80.0	81.1
Black	11.4	9.4	10.6	13.1	10.1
Hispanic	5.4	7.2	4.9	5.8	6.5
Other	2.3	2.5	2.0	1.1	2.3
Low SES	24.1	23.8	28.2	25.9	25.0
Middle SES	50.1	54.6	56.6	59.1	55.6
High SES	25.8	21.6	15.2	15.0	19.4
Low ability	23.1	22.4	25.9	28.7	24.1
Middle ability	50.4	59.5	62.5	57.0	59.5
High ability	26.5	18.1	11.6	14.3	16.4
Academic program	39.2	31.9	22.0	26.0	28.9
Vocational program	24.7	29.7	41.2	45.9	34.1
General program	36.1	38.4	36.8	28.1	36.9
Aspirations					
High school only	18.7	8.8	12.2	14.2	9.8
Vocational certificate	18.9	21.1	56.2	48.4	30.6
Associate degree	15.2	33.1	18.9	6.4	29.5
Bachelor's degree	25.6	23.0	9.4	17.8	19.1
Postgraduate degree	21.5	13.9	3.3	13.2	11.1

Source: HS&B Seniors, 1980.

programs nonetheless enroll students from all backgrounds.

Credits Earned by Field

Another way to consider enrollment patterns is in terms of the actual credits earned by students attending postsecondary institutions. Table 6 presents data on the distribution of credits, by subject matter, for all 1980 graduates enrolled in postsecondary education.[7]

Consistent with earlier results, these findings show that vocational credits represented a large share of total postsecondary credits for the Class of 1980. Among all the courses taken by students at the postsecondary level in all four types of institutions, 34.7 percent were vocational and 61.1 percent academic. The percentages were essentially the same for public two-year and four-year institutions; that is, 34.7 percent of the courses taken by the Class of 1980 in two-year institutions and 31.9 percent in four-year colleges were vocational. Four-year institutions by this measure are no more "academic" than two-year public colleges. Not surprisingly, the proportions of total credits earned were essentially reversed for public technical institutes and private vocational schools, where basically 70 percent of the courses taken were vocational and 25 percent were academic.

A small but noticeable proportion, 4.2 percent, of the credits earned by students in postsecondary institutions were remedial or avocational. This percentage was larger for public, two-year institutions (6.5 percent) than for public technical institutes (3.8 percent) or private vocational schools (1.5 percent). It is important to recognize that these figures are for total credits earned by students and not courses taken. Because many remedial courses are noncredit, credit counts underestimate the total share of course work in remedial areas. When analyzed by course enrollments, remedial courses taken, whether for credit or not, amounted to 12 percent at public two-year colleges and 7.3 percent among all post-secondary institutions.

The percentage distributions of credits in table 6 show the relative popularity of different vocational areas within each type of institution. Business was clearly the most popular vocational education course offered at public two-year colleges, accounting for more than one-third of all vocational credits earned at these institutions. At public technical institutes, vocational courses most frequently taken were business, technical and engineering, and trades and industry. Combined, these areas accounted for 70 percent of all vocational course work taken at these institutions. At private vocational schools, business accounted for the largest share of credits, but the health care and technical and engineering fields also were popular.

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[7]Some transcripts reported credits that seemed unreasonably high, sometimes up to 40 or 50 credits per course. We assumed these were actually clock hours and used a standard algorithm to convert clock hours to equivalent credits.

Table 1-6

Distribution of Postsecondary Credits by Field,
Class of 1980

	Public Two-Year Colleges	Public Technical Institutes	Private Vocational Schools	Four-Year Colleges	All Post-secondary Institutions
Shares of all postsecondary credits	18.1%	6.1%	2.1%	74.1%	100.0%
Share of all postsecondary vocational credits	30.2%	11.4%	7.5%	50.1%	100.0%
Shares of credits among curriculum areas					
Vocational	34.7%	70.4%	69.4%	31.9%	34.7%
Academic	58.3	24.9	28.1	64.6	61.1
Remedial/avocational	6.5	3.8	1.5	3.2	4.2
	100.0%	100.0%	100.0%	100.0%	100.0%
Distribution by fields					
Vocational fields	34.7	70.4	69.4	31.9	34.7
Business	12.0	18.4	24.5	9.6	10.7
Marketing	1.5	1.6	4.4	1.7	1.8
Health care	3.6	7.7	14.0	1.8	2.6
Occupational home economics	2.4	2.7	4.9	1.9	2.0
Trades and industry	3.1	15.0	7.0	1.1	2.1
Technical and engineering	6.9	17.0	10.2	6.7	7.1
Education	1.0	.4	.1	3.8	3.0
Public service	1.1	2.0	.0	1.5	1.4
Agriculture	1.1	2.8	.4	1.2	1.2
Communications	1.9	2.9	3.9	2.6	2.5
Academic fields	58.3	24.9	28.1	64.6	61.1
Letters	12.1	5.8	6.2	9.8	10.0
Foreign languages	1.4	.0	.1	3.4	2.8
Humanities	6.1	.6	2.3	8.6	7.7
Sciences	10.5	4.1	4.6	11.4	10.7
Mathematics	9.1	7.4	4.4	7.6	7.8
Social sciences	14.2	6.1	4.9	16.2	15.1
Fine arts	4.7	.8	5.6	7.1	6.3
Liberal/general studies	.3	.1	.1	.5	0.4
Remedial/avocational	6.5	3.8	1.5	3.2	4.2
	100.0%	100.0%	100.0%	100.0%	100.0%

Source: HS&B Seniors 1980.

Although these data indicate what fields were popular on the basis of total credit counts, they do not indicate whether enrollment was based on few students taking many courses in a field, or many students having brief exposure to the field. This topic is addressed later in this report. Also, it is important to remember that the institutions providing postsecondary vocational training differ substantially in size. In almost all occupational fields, public two-year colleges are the primary providers of occupational training at the nonbaccalaureate level. For the Class of 1980, they accounted for over 60 percent of all vocational credits earned by students attending nonbaccalaureate institutions (table 6).

Credits Earned Per Student

Distributions of the total amount of postsecondary credits earned by all students from the Class of 1980 are shown in table 7. The distributions are shown separately for students first entering each type of postsecondary institution. A fact of life in community colleges and technical institutes clearly shown by these data is that a significant number of the students accumulated few credits. One out of four students entering a community college subsequently earned fewer than 13 credits. Among students entering technical institutes, 21 percent earned fewer than 13 credits. In comparison, only 6 percent of students in four-year colleges earned so few credits.

But many other students from the class of 1980 initially entering community and technical colleges eventually earned a large number of postsecondary credits. More than one-third of all students earned more than 60 credits. Some of these credits were earned after students transferred to four-year colleges.

These patterns suggest a dilemma for nonbaccalaureate institutions. Passing through the enrollment doors are a large number of students who are unlikely to earn many credits. The institutions have accommodated these students by establishing a large array of curricular and certification arrangements. At the same time, the institutions must provide extensive instruction and depth of curriculum for the many students who eventually earn a significant number of postsecondary credits. These students require a structured, coherent sequence of progressively demanding course work.

Participation in Science, Mathematics, and Technology

In recent years as the need for more scientists, engineers, and skilled technicians has become evident, concern has been expressed about whether minority groups have adequate access to the training required to enter these fields, many of which are in high-paying, fast-growing areas of the economy.

Table 8 shows that the proportion of associate degree recipients with major fields in math, science, or technology and engineering differed substantially by race. Blacks and Hispanics were far

Table 1-7

Distribution of Total Credits Earned by Students Entering Postsecondary Education, Class of 1980

Total Credits	Students Entering Public Two-Year Colleges	Students Entering Public Technical Institutes	Students Entering Four-Year Colleges	All Students
Average number of credits	48.7	45.6	86.7	70.8
Distribution of credits				
0-12	24.8%	21.1%	6.2%	13.1%
13-24	14.1	15.9	6.6	9.8
25-36	9.0	10.5	8.7	9.3
37-48	8.6	9.1	5.2	6.7
49-60	8.2	7.2	4.9	6.2
61-72	9.8	13.3	6.3	8.2
73-84	5.8	9.7	5.9	6.2
85-96	4.1	3.4	8.2	6.2
97-108	3.6	4.1	8.2	6.5
109-120	2.9	1.9	14.6	9.7
Over 120	8.6	3.7	25.2	17.9

Source: HS&B Seniors, 1980.
Note: A large number of transcripts for students enrolled at private vocational schools lack complete information on credits earned. Credit counts for students at these institutions may not be totally accurate. For this reason, credit counts for students entering private vocational schools are omitted here. However, a parallel analysis of courses taken shows that 17.9 percent of the students at private vocational schools take fewer than 2 courses, essentially reinforcing the conclusion that a substantial number of students attending community colleges, technical institutes, and private vocational schools take a minimal amount of course work.

less likely to receive degrees in these fields than were white associate degree holders. Members of minority groups from the Class of 1980 who received associate degrees lagged substantially behind other students in the amount of course work taken in math, science, and technology and engineering. Although minorities were generally as likely as white students to take some course work in these areas, they averaged approximately 30 percent fewer credits than white students. Although other vocational fields may provide some training using math, science, and advanced technical skills, these results strongly indicate that minorities who expect to compete in fields requiring extensive knowledge of math,

Table 1-8

Enrollments in Math, Science, and Technology Among Students Receiving Associate Degrees, Class of 1980

	Average Total Credits	Average Total Credits in Math, Science, Technology and Engineering[a]	Percentage Receiving Associate Degrees in Math, Science, or Technology and Engineering
Students completing vocational associate degrees			
All students	86.6	37.9	25.6%
Whites	82.9	39.4	26.9
Blacks	79.3	25.8	19.4
Hispanics	68.6	25.5	10.5
Students completing academic associate degrees			
All Students	94.6	29.5	21.1%
Whites	96.8	32.2	24.1
Blacks	78.1	15.2	6.3
Hispanics	87.6	22.0	7.3

Sources: HS&B Seniors, 1980. Data on degrees earned are from W. Norton Grubb, High School and Beyond: Postsecondary Vocational Education of 1980 Seniors (April 1987), and Postsecondary Education of 1980 Seniors Completing Academic Associate Degrees (May 1987), submitted to Centers for Statistics, Contract 300-85-0206.

[a]Includes average credits earned only among students who took any courses in math, science, and technology and engineering.

science, and advanced technology are not entering the labor market with the same preparation in these fields as other students.

DEGREES AND CERTIFICATES

Highlights

- **Four years after high school graduation, about 19 percent of all students from the Class of 1980 had completed a college credential. Compared with the Class of 1972, an increasing proportion obtained vocational associate degrees, and a decreasing proportion received bachelor's degrees.**
- **When the Class of 1980 is compared with the Class of 1972 the proportion of academic associate degrees awarded at community colleges is found to have declined markedly in relation to vocational associate degrees. Certificates represent a small share of credentials awarded.**
- **Graduating students in technical institutes were found to be evenly divided between those receiving vocational associate degrees and those receiving certificates. Virtually none received academic credentials.**
- **Rates of completing an associate degree or certificate are almost twice as high for public technical institutes and private vocational schools as for community colleges; but the majority of these credentials are certificates rather than associate degrees.**
- **In sharp contrast to rates of completing bachelor's degrees in four-year institutions, rates of graduating from a community college or public technical institute with an associate degree or certificate are not related to the socioeconomic background of students.**
- **Good performance during high school and general ability increase the likelihood of completing all types of degrees except certificates.**
- **Students from the Class of 1980 earning vocational associate degrees from community colleges accumulated an average of 74 credits, distributed broadly between vocational and academic subjects (41.5 versus 29.2 credits). Students earning academic associate degrees completed an average of 70 credits, with 49.1 credits in academic subjects and 15.1 credits in vocational subjects.**
- **More than 80 percent of the students earning a vocational associate degree from a community college or technical institute completed more than 18 credits in at least one vocational area. For certificate holders, 67 percent completed more than 18 credits in at least one vocational area.**

Rates of Completing Degrees and Certificates

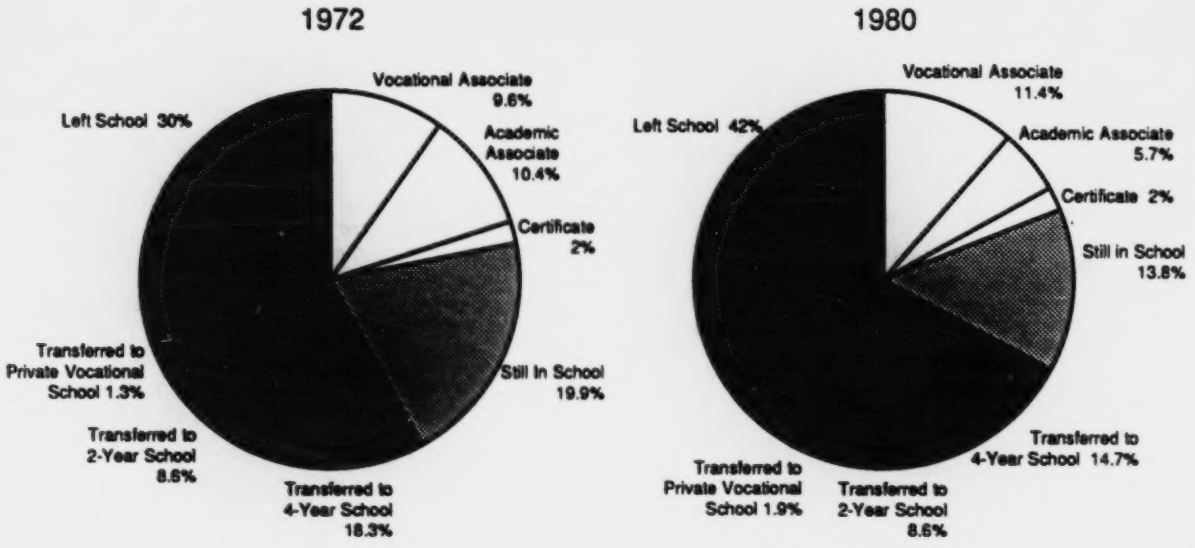
The data on total credits eventually received by students who entered postsecondary education shown in the previous section include students in several different categories: (1) students who graduated with a postsecondary degree or certificate of some kind, (2) students who were still attending the original institution in which they had enrolled, (3) students who were still in school but had transferred to another institution, and (4) students who were no longer enrolled in any postsecondary institution and left without receiving a degree or certificate of any kind. Figure 1 shows the percentage in each category for students entering different postsecondary institutions.

The figure shows that 11.4 percent of the students who entered a community college from the Class of 1980 had completed a vocational associate degree by 1984. Nearly 6 percent completed academic associate degrees and 2 percent completed certificates within four years of high school

FIGURE 1

Completion, Noncompletion, And Transfers Among High School Graduates Entering Postsecondary Education

PUBLIC TWO-YEAR COLLEGES



PUBLIC TECHNICAL INSTITUTES

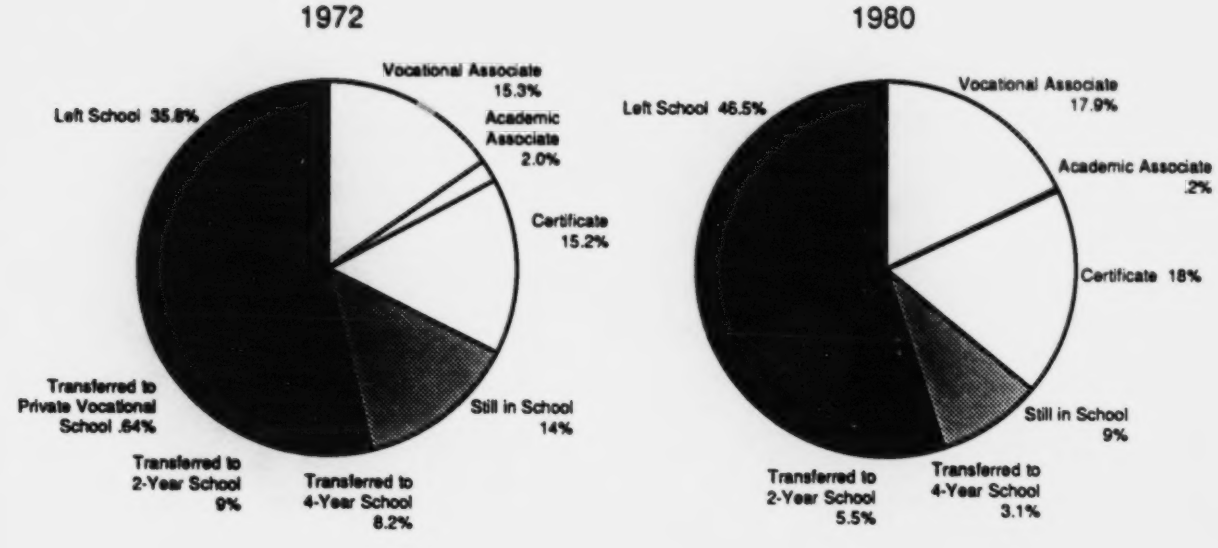
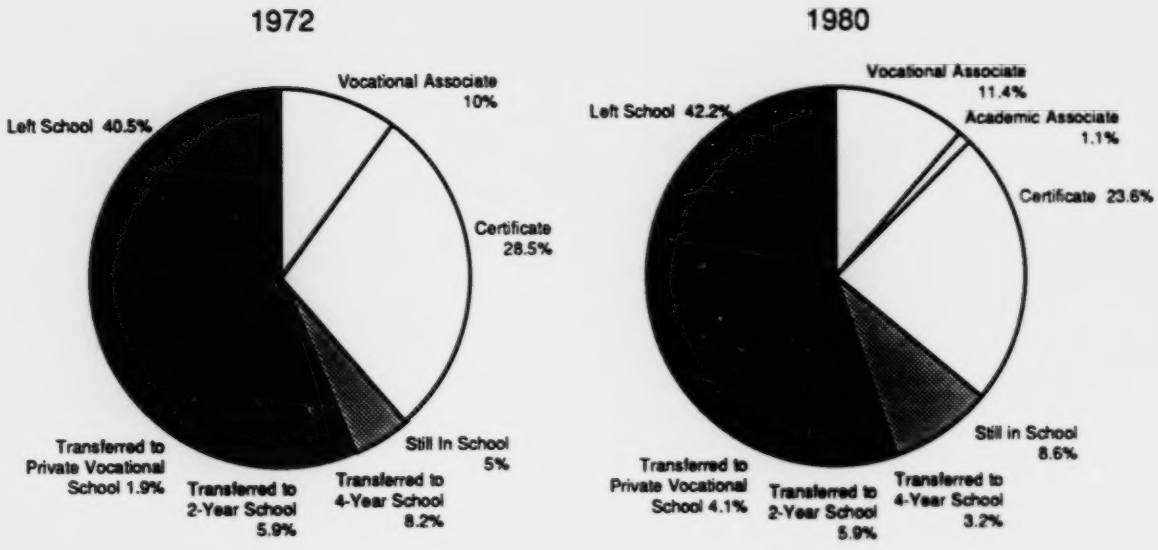


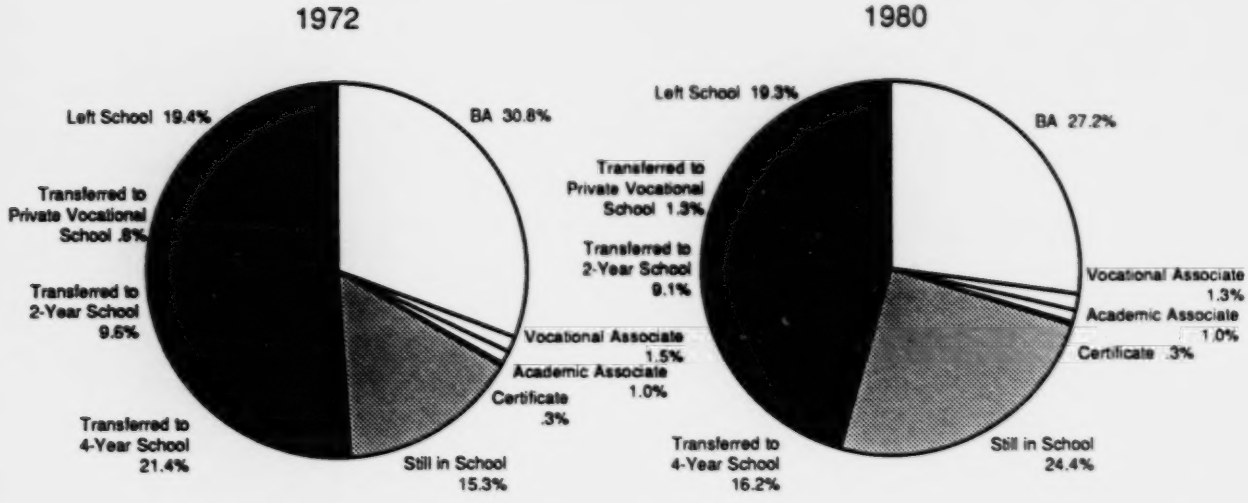
FIGURE 1 (continued)

Completion, Noncompletion, And Transfers Among High School Graduates Entering Postsecondary Education

PRIVATE VOCATIONAL SCHOOLS



FOUR-YEAR COLLEGES



graduation. Compared with the Class of 1972, this represents a decline in the overall percentage of students receiving associate degrees, a slight increase in vocational degrees, and a large decrease in the proportion of academic degrees.

Rates of completing an associate degree were similar for students entering technical institutes (about 18 percent), but in contrast to the situation at community colleges, virtually all the degrees awarded were in vocational fields. An equal proportion (18 percent) of students received certificates.

Rates of completion were substantially higher for private vocational schools than for public two-year colleges; however, the types of credentials awarded were heavily skewed toward certificates rather than associate degrees. Overall, however, the proportions of students earning vocational associate degrees were equal in private vocational schools and community colleges.

Table 1-9

Distribution of High School Graduates Receiving Postsecondary Degrees, Classes of 1972 and 1980 (Percentage)

Postsecondary Education	Class of 1972 After Seven Years	Class of 1972 After Four Years	Class of 1980 After Four Years
Completed a degree	31.9%	21.6%	19.0%
Academic associate	1.8	1.5	1.8
Vocational associate	3.6	2.8	4.1
Certificate	2.1	1.7	1.9
Bachelor's	24.4	15.6	11.2
Left postsecondary education without obtaining a credential	24.2%	17.9%	23.2%
Four-year institution	11.1	9.0	10.2
Two-year institution	13.1	8.9	12.9
Still in postsecondary education	7.9%	21.6%	19.3%
Did not enter postsecondary education	36.6%	39.9%	38.5%
Total	100.0%	100.0%	100.0%

Sources: NLS-72 AND HS&B Seniors, 1980.

These percentages are for the rates at which students received a postsecondary credential from the institution where they first enrolled. A measure that includes eventually receiving a degree or certificate regardless of institution attended is shown in table 9. This table shows the percentage of students from the Classes of 1972 and 1980 who completed postsecondary degrees or certificates from some institution within four years (and, in the case of the Class of 1972, seven years) after leaving high school. The overall rate at which graduates from the Class of 1980 completed a college degree or certificate within four years of leaving high school was 19 percent. This overall rate of completion is slightly lower than the overall comparable figure for graduates in the Class of 1972 (21.6 percent). The two most significant trends, however, are the increase in the proportion of vocational associate degrees from 2.8 percent to 4.1 percent of students, and the decrease in bachelor's degrees from 15.6 percent to 11.2 percent. Completion of academic associate degrees and certificates remained about the same. This pattern is consistent with earlier results showing the relative growth of enrollments in community college vocational programs.

Four years after high school graduation a substantial number of students had neither completed nor left postsecondary education. Among 1980 high school graduates initially entering community college, after four years about 39 percent remained enrolled in postsecondary education--at their original institutions or others to which they transferred (figure 1). Considerably fewer students who initially entered public technical institutes and private vocational schools remained in postsecondary education after four years.

Some of the students still enrolled in postsecondary education after four years will undoubtedly persist and eventually complete a credential. However, the data in table 9 indicate that most of the students who take longer than four years to complete their education are students who earn baccalaureate degrees. Whereas the proportion of students in the Class of 1972 who finished baccalaureate degrees after seven years instead of four increases from 15.6 percent to 24.4 percent, the increase in the numbers of students attaining associate degrees and certificates in the three extra years is less.

Who Completes Postsecondary Credentials?

The results in table 10 indicate differences among the types of students likely to complete postsecondary credentials. In the Class of 1980, women were more likely to complete than men. Blacks were less likely than whites to complete all types of credentials; Hispanics were much less likely than whites or blacks to complete bachelor's degrees. Socioeconomic background had a weak or inconsistent relationship to completion of credentials below the baccalaureate, but a powerful effect at that level. Academic ability was found to affect strongly the tendency to complete baccalaureate degrees, and it was related, but to a much smaller degree, to the completion of vocational and academic associate degrees. Academic ability as measured in high school had no apparent effect on

Table 1-10

Characteristics of High School Graduates
Completing Credentials, Class of 1980

Student Characteristics	Associate Degree		Certificate	Baccalaureate Degree	Total Completions
	Academic	Vocational			
All Students	1.8%	4.1%	1.9%	11.2%	19.0%
Male	1.3	3.1	1.4	10.6	16.4
Female	2.3	5.2	2.5	11.9	21.9
White	1.9	4.5	2.0	12.7	21.1
Black	1.0	2.1	1.1	5.2	9.4
Hispanic	2.3	3.6	3.4	3.9	13.2
Low SES	1.1	3.5	2.2	3.8	10.6
High SES	2.3	3.6	1.3	21.4	29.0
Low ability	0.8	1.7	2.4	1.2	6.1
High ability	2.9	3.9	0.7	25.7	33.2
Aspirations					
High school only	0.1	0.8	0.8	0.2	1.9
Vocational certificate	0.7	4.6	5.3	0.6	11.2
Associate degree	2.7	11.0	3.2	2.2	19.1
Bachelor's degree	2.5	4.2	0.7	19.9	27.3
Postgraduate degree	2.9	2.1	0.6	26.7	32.3

Source: HS&B Seniors, 1980.

the tendency to receive a certificate.

Credits Earned

Certificate and degree holders from the Class of 1980 earned a significant number of credits on average, even in relation to the holders of bachelor's degrees. As shown in table 11, associate degree holders earned between 70 and 109 credits in all areas of the curriculum, compared with 118 credits for bachelor's degree holders. Associate degree students who earned all their postsecondary credits in two-year institutions earned an average of 74 credits for vocational degrees and 70 credits for academic

Table 1-11: Credits Earned by Graduates of Postsecondary Institutions
Class of 1980

	Certificate		Associate Degrees[a]				Four-Year College Bachelor's
				Public Two-Year			
	Public Technical	Public Two-Year	Public Technical	Vocational	Academic	4-Yr. Transfer	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Average number of credits earned in all subject areas	52.9	41.9	85.8	73.9	70.0	108.8	117.7
Vocational	41.7	30.5	53.8	41.5	15.1	34.2	42.3
Academic	9.1	9.2	28.5	29.2	49.1	66.5	71.9
Percentage of graduates with more than 18 credits in --							
One vocational area	84.1%	66.7%	94.0%	79.8%	10.4%	50.9%	61.0%
One academic area	0	0	23.1	14.2	32.3	50.5	65.6
Percentage of graduates with fewer than 6 credits in --							
All vocational areas	2.9%	11.4%	0	0	30.6%	13.0%	12.5%
All academic areas	3.3	4.4	0.4%	10.0%	1.2	0	2.1
Percentage of graduates with total credits less than --							
0-24 credits	22.4%	23.4%	0	3.5%	0	0	2.6%
25-48 credits	16.2	40.3	0	5.5	14.4%	0	8.2
40-72 credits	39.8	34.5	25.2%	49.3	45.8	7.0%	1.8
73-96 credits	10.1	0.2	44.9	30.2	28.9	25.9	5.3
97-120 credits	11.4	0.9	17.4	5.0	7.4	40.2	22.7
120+ credits	0	0.7	11.0	6.6	2.4	26.9	59.2

Source: HS&B Seniors, 1980.

[a]Figures for credits earned are for all credits prior to and following receipt of a degree or certificate. Colume 3 refers to associate degree holders from public technical colleges; it includes a very limited number of students who subsequently transferred and earned credits from four year institutions. Columns 4 and 5 refer to credits earned by associate degree holders attending nonbaccalaureate institutions exclusively. Column 6 summarizes credits earned by associate degree holders who transferred and earned a portion of their credits at four-year institutions.

degrees; those earning additional credits in four-year institutions earned 109 credits. Certificate degree holders from two-year institutions averaged nearly 42 credits, or more than half the average credits earned by two-year associate degree holders. Students receiving certificates and associate degrees from technical colleges earned substantially more credits than did their counterparts from public two-year colleges.

Patterns of course taking differed significantly among students earning vocational and academic associate degrees. Vocational students in community colleges who earned an associate degree completed large proportions of both vocational and academic credits. The averages were 42 credits of vocational subjects and 29 credits of academic course work. Not surprisingly, this ratio of vocational to academic course work was somewhat higher for students with vocational associate degrees from public technical, or "vo-tech", institutions. For these students, the averages were 54 credits of vocational subjects and 29 credits of academic subjects. In contrast, academic associate degree students earned only about 20 percent of their total credits in vocational subjects. The holders of certificates earned, on average, 9 of their total credits, or about 20 percent of their total course work, in academic subjects.

Specialization

Complete analysis of the effect that enrollment patterns like those examined in this chapter have on the job prospects of the person involved requires the careful development of additional concepts and statistical methodology. This will be done in other projects of the National Assessment.

In any assessment of the effects of postsecondary education for students, one subject of potential importance is the extent to which the courses taken are concentrated in a few vocational and academic areas or are spread thinly with little apparent concentration of studies. Accumulating a number of related courses in some vocational area of the curriculum, such as aircraft mechanics or nursing, may result in a significantly higher level of marketable skills than spreading the same course effort over several occupational areas. At least, this is a critical proposition to test: that postsecondary vocational education pays off best when it develops substantial skills that are fairly specific to some occupational area. Another measure could be the degree to which a student's course work relates to the job the student subsequently attains.

The measure of course concentration employed in this chapter is the percentage of students in an educational institution completing more than 18 credits in some area (whether or not they leave before

graduating or earn a credential).[8] The assumption is that students who have earned at least 18 credits in an area have, in effect, completed a "program" in that area. At the other end of the scale is a measure of the dispersal of student course taking: the percentage of students accumulating fewer than 6 credits in all areas of the curriculum in which at least one course is taken.

Results for students who graduated from postsecondary institutions are shown in table 11. Vocational students did well in concentrating their course work in a particular specialty. In community colleges, about 80 percent of vocational associate degree holders and 67 percent of certificate recipients accumulated 18 credits or more in some vocational area. In contrast, only 32 percent of academic associate degree holders earned more than 18 or more credits in a particular academic specialty. In technical colleges, recipients of associate degrees and certificates were even more likely to concentrate their course work in at least one vocational area. Associate degree holders who transferred to four-year colleges were much more likely to complete a concentration in an academic field than were associate degree recipients who earned all their credits at a nonbaccalaureate institution.

NONDEGREE STUDENTS

Highlights

- **After entering postsecondary education, 37.6 percent of the students in the Class of 1980 left school within four years without receiving a degree or certificate. This exceeded the proportion of postsecondary students who received a certificate or degree in the same four years (30.9 percent).**
- **Half of the members of the Class of 1980 who entered community colleges, public technical institutes, or private vocational schools and 28 percent of students who entered four-year colleges left postsecondary education before completing a degree or certificate.**
- **Rates at which students failed to earn a degree or certificate are significantly higher for the Class of 1980 (37.6 percent) than for the Class of 1972 (29.8 percent).**
- **More than 40 percent of members of the Class of 1980 who left postsecondary education without receiving a degree (excluding four-year colleges) earned fewer than 13 credits in total.**
- **Rates of leaving postsecondary education without completing a degree were the same for vocational and academic students. Members of the Class of 1980 who left postsecondary education without obtaining a credential earned an average of 23 credits in community colleges 25 credits in technical institutes, and 39 credits in four-year colleges.**
- **Low socioeconomic status (SES) is related to the likelihood of leaving all types of institutions, but the relationship is strongest for four-year colleges.**

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[8]The use of 18 credits as a cutoff indicating significant amounts of course work in one area is based on previous research indicating that students receiving certificates typically earn 18 to 21 credits in their major area. W. Norton Grubb, "The Postsecondary Vocational Education of 1980 Seniors," MPR Associates, for the Center for Education Statistics, LSB-87-4-10, April 10, 1987.

Basic data on length of enrollment and rates of completing credentials are important to consider for purposes of policy review, and, ultimately, for accurate assessment of the benefits and costs of the training and education being received. The reasons that students choose to enroll in postsecondary education are many and complex, as are their subsequent decisions to complete a credential or to leave. One group may enroll expressly to earn a degree and persist to achieve this goal. A second group may enroll only to take some course or a series of courses to accomplish certain job-related or avocational objectives. A third group may earn a limited number of credits but then become discouraged and quit, or have to leave before accomplishing their educational objectives. A fourth group may enroll for limited amounts of course work simply to explore different career alternatives and gain career information.

A starting point for determining patterns of leaving school without earning a degree or certificate is to examine the proportion of students who enroll for different amounts of credits and continue on or not to earn degrees. Can different groups of students and patterns of enrollment among students who take fewer credits than required to complete degrees or certificates be identified? How many students take very few credits and how many take a large number of credits but still do not graduate? Do completing a program and earning a degree or certificate confer particular advantage upon students seeking well-paid positions in their fields of training? Are students who take few credits gaining education of value? Are students who take many credits gaining education of the same or disproportionately greater value? These critical questions of the value of different patterns of enrollment and completing programs will be examined in other projects of the National Assessment. This section presents basic information on the numbers of members of the two classes who accumulated different amounts of credits but left postsecondary education without completing a degree or certificate.

A factor to be kept in mind is that all results presented in this chapter on postsecondary enrollments apply only to students who entered postsecondary education shortly after graduation from high school. Many of these students have indicated that they aspired to complete vocational or other nonbaccalaureate education. Traditional concepts of education and measures of program completion may be much more appropriate for this population than for other populations, mainly adults, who may have different educational objectives.

Rates of Leaving School without Completing a Degree or Certificate

Data presented in the previous section showed that a large proportion of students leave postsecondary education without completing a degree or certificate and that the proportion was much higher for the Class of 1980 than for the Class of 1972 (see figure 1). The rates for students who

dropped out of postsecondary education within four years of high school graduation[9] for the Class of 1972 were 30 percent for public two-year colleges (compared with 42 percent for the Class of 1980); 36 percent for public technical institutes (compared with 46 percent for the Class of 1980); 40 percent for private vocational schools (compared with 42 percent for the Class of 1980); and 19 percent for four-year institutions (the same as for the Class of 1980).[10]

Table 12 confirms that this increase in noncompletions applied to all groups of students--men and women alike, all racial groups, students with high ability as well as low ability, students of high socioeconomic status as well as low socioeconomic status, and those with high educational aspirations as well as those with more modest educational goals.

Similar across-the-board increases in noncompletion suggest that explanations based on changes in the demographic composition of those attending higher education do not account for increased noncompletions. Furthermore, many members of the Class of 1980 left postsecondary education during the economic recession of 1982-83. Generally, poor economic conditions are thought to increase postsecondary enrollment, but rates of exit from postsecondary education grew during the 1980s. Although these data cannot reveal why students left, when exit rates approaching 50 percent within four years of high school graduation indicate that nonbaccalaureate institutions face the difficult task of providing an effective education to many students who are not actively pursuing a traditional degree or certificate.

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[9]Whether a student is classified as having left postsecondary education or still enrolled depends on enrollment status at a single point in time. Thus, students who enroll sporadically could be misclassified if not actually enrolled at the end of the observation period. The data from NLS-72 seven years after high school graduation are helpful in determining whether (1) those classified as school leavers after four years return to school at a later period and (2) whether those still in school after four years go on to complete their credential.

Comparing results from NLS-72 four years and seven years after high school graduation shows clearly that over the longer period of time, rates of exit among students initially enrolled at community colleges increase substantially (from 30 percent to 39 percent), the number of students still in postsecondary education declines considerably (from 20 percent to 13 percent), and the percentage of students earning associate degrees increases marginally (from 20 percent to 21 percent). Although limitations inherent in the nature of the observation period may result in misclassification of individual students, these results indicate that over time, fewer students remain in postsecondary education many more drop out, and very few persist sufficiently to obtain a degree. Results over the longer observation period are consistent with those based on observation four years after graduation. If anything, they indicate that dropout results based on four years' observation are understated.

[10]These estimates of noncompletion rates are probably conservative. Many students classified as still in postsecondary education will eventually leave without a credential. Also, postsecondary institutions were unable to provide transcripts for some students who claimed to have enrolled. Such students were classified as not enrolled, but if some actually entered postsecondary education and left shortly thereafter, dropout rates also would be understated.

Table 1-12

Distribution of Postsecondary Students Leaving Postsecondary Education Without Completing Credentials, Classes of 1972 and 1980 (Percentage)

Student Chacteristics	Students Entering Public Two-Year Colleges		Students Entering Public Technical Institutes		Students Entering Private Vocational Schools		Students Entering Four-Year Colleges		All Students Entering Postsecondary Education	
	Class		Class		Class		Class		Class	
	1972	1980	1972	1980	1972	1980	1972	1980	1972	1980
All Students	36.0%	49.6%	38.5%	50.1%	44.9%	51.9%	25.1%	28.8%	29.8%	37.6%
Male	38.6	46.0	40.6	48.4	43.1	50.7	24.8	28.0	30.3	35.6
Female	33.0	52.8	35.8	52.1	45.9	52.4	25.4	29.5	29.3	39.4
White	35.3	48.8	39.5	50.3	43.9	50.3	24.2	26.5	29.0	35.7
Black	41.8	59.7	36.5	62.5	57.3	65.6	33.3	42.1	37.1	50.0
Hispanic	42.1	49.5	low n[a]	25.2	low n	46.7	32.6	41.6	36.7	44.6
Low SES	41.1	58.4	47.2	58.8	41.2	54.5	32.5	45.1	37.8	51.9
High SES	30.8	42.6	34.2	31.8	51.8	46.6	19.6	24.1	23.0	28.9
Educational Ability (in high school)										
Low ability	42.1	58.9	46.6	67.0	48.4	67.4	46.5	53.2	45.3	58.7
High ability	30.6	37.1	34.5	55.7	32.6	44.3	18.1	20.3	20.9	24.5
Education aspirations (in high school)										
High school only	43.3	59.1	44.7	71.5	52.2	low n	50.9	57.5	46.5	60.3
Vocational cert.	44.2	64.9	43.0	52.1	47.0	53.2	44.6	51.4	44.7	57.8
Associate degree	36.6	54.3	20.7	34.8	41.6	48.9	42.1	56.8	37.0	52.1
Bachelor's degree	30.6	41.8	36.1	29.4	35.9	43.8	24.5	26.3	25.9	30.6
Postgraduate degree	28.9	36.6	low n	low n	low n	72.5	16.7	23.3	19.1	29.9

Sources: NLS-72 Seniors and HS&B Seniors, 1980.

Note: Rates of noncompletion for all students shown here are somewhat higher than those shown in figure 1. Figure 1 measures the tendency of students to leave the institution they initially entered before receiving a degree or certificate. Most students--70 percent in HS&B Seniors, 1980, after four years and 60 percent in NLS-72 after seven years--attend only one institution. But students may transfer among institutions and eventually leave postsecondary education without earning a credential. The figures in table 12 reflect the eventual status of students after they transferred to another institution.

[a]"Low n" is indicated where the sample size is too small for a reliable estimate.

Who Leaves School Without Completing Credentials?

Certain types of students are more likely than others to leave postsecondary education without earning a credential, as table 12 shows. Regardless of the institutions attended, students from low socioeconomic family background are more likely than others to leave without a credential. Blacks have consistently higher rates of leaving without credentials than whites, whatever type of institution they enter. Proportionately more Hispanics at four-year institutions leave than do whites, but Hispanics who initially enter community colleges and private vocational schools leave without credentials at about the same rate as whites. Ability as measured in high school strongly influences the likelihood of noncompletion in expected ways.

The effect of aspirations may be particularly important for community colleges, public technical colleges, and private vocational schools, because most entrants had relatively low postsecondary aspirations. Of the students entering community colleges from the Class of 1980, for example, 8.8 percent did not aspire to any postsecondary education while in high school (see table 5). A high proportion of that group, 59 percent left postsecondary education without completing any credential (see table 12). Less than 2 percent of high school graduates with such aspirations received a degree or certificate (table 10). Of the 21.1 percent of students aspiring to attend a vocational or trade school, 65 percent left before completion, only 11 percent completed a degree or certificate. Similarly, of the 33.1 percent of students aspiring to an associate degree, 54 percent left without completing, while 19 percent did complete credentials. Only among those students aspiring to a bachelor's or postgraduate degree, many of whom transfer to other institutions before obtaining an associate degree, are rates of noncompletion significantly lower.

Similarly, in technical institutes, educational aspirations are strongly related to completion of degrees or certificates. Half of those who aspire to a vocational or technical school do not complete a credential, while 35 percent of those who aspire to an associate degree fail to complete a degree or certificate. Noncompletion rates at private vocational schools are less powerfully contingent on the educational aspirations of students enrolled.

Total Credits and Courses

Given the relatively small percentage of students who complete nonbaccalaureate programs, the amount of vocational training that students actually receive while enrolled in postsecondary education is an important matter. If students who do not get certificates or degrees nonetheless earn a substantial number of credits in a particular occupational field, they may have acquired enough technical knowledge and skills to fare well in the labor market. Conversely, if these students earn few credits in an occupational area, it could mean that they acquired few occupational skills.

Table 1-13

Credits Earned by Noncompleters,
Class of 1980

Credits Received	Students Entering-- Public Technical Institutes	Public Two-Year Colleges: Academic	Public Two-Year Colleges: Vocational	Four-Year Colleges
Average number of total credits	25.4	21.7	23.8	39.5
Vocational	18.4	3.1	10.9	9.0
Academic	5.1	16.6	11.2	28.6
Percentage with 0-6 credits in--				
All vocational areas	24.8%	23.9%	46.0%	38.6%
All academic areas	52.9	46.4	32.5	20.2
Percentage with over 18 credits in--				
One vocational area	30.7%	2.3%	11.1%	9.1%
One academic area	0	3.7	2.9	17.0
Percentage of noncompleters with--				
0-6 credits	17.7%	20.7%	19.9%	6.3%
7-12 credits	13.6	26.6	20.7	14.2
13-24 credits	24.8	23.5	23.4	18.4
25-48 credits	30.5	18.2	20.1	28.1
49-72 credits	10.6	7.0	12.8	18.5
73-96 credits	2.7	1.8	2.8	10.2
97+ credits	0	2.1	0.3	4.5

Source: HS&B Seniors, 1980.
Note: Data on credits earned by students enrolled at private vocational schools are omitted because of incomplete credit information on the transcripts for many students.

There are substantial differences in the average number of credits earned by those who gain postsecondary credentials and those who do not. Table 13 shows the number of credits earned by members of the Class of 1980 who enrolled in different postsecondary institutions but left school without completing degrees or certificates. (Table 11 provided similar information for those who completed their credentials.) It was shown earlier that students who completed vocational associate

degrees in community colleges earned an average of 74 credits.[11] Vocational noncompleters in community colleges earned, on average, about 24 credits (table 13), roughly the same number of total credits as their academic counterparts. Students leaving public technical institutes averaged 25 credits, while students who earned associate degrees from technical colleges averaged 86 credits (table 8). Students leaving four-year colleges earned an average of 40 credits.

A significant finding reflected in table 13 is that about 20 percent of the members of the Class of 1980 who left without completing a credential at a community college actually earned fewer than 7 credits. In public technical institutes, 18 percent of noncompleters earn fewer than 6 credits. Furthermore, over 40 percent of noncompleting students in community colleges and 31 percent in technical institutes completed fewer than 12 credits. From the percentages of degree recipients and "noncompleters" shown earlier in figure 1, these results indicate that the number of students who enrolled in public two-year colleges and earned fewer than 13 credits was double the number of students who graduated with either a certificate or associate degree. For students attending technical colleges, the proportion earning fewer than 12 credits was roughly the same as the proportion obtaining a credential.

Information about the average credits earned by private vocational schools cannot be presented because the credits earned by students are not uniformly indicated on the transcripts in the HS&B Seniors, 1980, and NLS-72 files. To provide some indication of the amount of student enrollment, we analyzed course enrollments, for which the data are more complete. The results in table 14 indicate that noncompleters in private vocational schools enrolled for about the same number of courses (13.4) as students in public two-year colleges (11.5 to 12.5) and public technical institutes (12). Given the number of credits earned, many such students apparently took courses that offered no credit or less than the standard 3 credits, or the students withdrew from the course.

Many noncompleters, especially those in community colleges, enrolled in only one or two courses in any particular area. The proportion of noncompleters with more than six courses in one vocational area is higher in technical institutes and highest in private vocational schools, reflecting the heavy vocational focus in courses offered at these institutions.

In general, the findings on course enrollments closely parallel the results on credits earned. With the exception of those enrolled in four-year colleges, noncompleters took about the same number of courses regardless of the institution they attended. For vocational students at community colleges, course work was evenly divided between academic and vocational areas. At public technical schools and private vocational schools, most courses were vocational.

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[11]This estimate includes some credits earned after receiving the associate degree. Students earning associate degrees who transferred to four-year institutions are reported separately.

Table 1-14

Course Enrollment Among Noncompleters,
Class of 1980

	Students Entering				
	Technical Institutes	Private Vocational	Public Two-Year Colleges		Four-Year Colleges
			Vocational	Academic	
Average number of courses taken					
Total courses	12.0	13.4	12.5	11.5	18.7
Vocational courses	7.9	8.4	5.3	1.4	4.3
Academic courses	3.0	4.3	5.7	8.4	12.8
Percentage with no more than 2 courses					
All vocational areas	37.4%	38.9%	50.0%	89.2%	64.4%
All academic areas	73.5	6.9	2.2	43.4	26.6
Percentage with more than 6 courses					
One vocational area	30.1%	39.0%	15.2%	2.8%	12.4%
One academic area	3.4	7.5	5.2	10.0	26.1

Source: HS&B Seniors, 1980.
Note: The average for total courses exceeds the sum of vocational and academic courses because some course work is classified as remedial/avocational.

Trends in Credits Earned

The tendency for noncompleters to earn relatively few credits appears to have increased in recent years (see table 15). Members of the Class of 1980 who entered community colleges but left without completing a credential earned, on average, fewer credits (23) than did their counterparts in the Class of 1972 (27.7) At community colleges and four-year colleges, the decline in average credits is entirely accounted for by students taking fewer academic courses. Thus, the shift in enrollments toward vocational education may in part reflect diminished interest in the academic side of postsecondary education.

Findings on course enrollments suggest an additional element to the story. Course enrollments appear to have remained about the same for the Class of 1980 as for the Class of 1972. It may be that noncompleters in the Class of 1980 enrolled in the same number of courses but were less likely to finish them, so that course counts remained unchanged while the number of credits earned fell.

Table 1-15

Credits Earned by Noncompleters
From the Classes of 1972 and 1980

Institution Entered	Class of 1972			Class of 1980		
	Total	Vocational	Academic	Total	Vocational	Academic
Public, two-year college	27.7	8.1	17.5	22.9	7.9	13.1
Technical institute	33.9	22.7	9.2	25.4	18.4	5.1
Four-year college	42.8	9.4	31.3	39.5	9.0	28.6

Sources: NLS-72 Seniors and HS&B Seniors, 1980.
Note: See note for table 14.

Specialization

A particularly important question is the extent to which students who leave postsecondary education before earning a degree or certificate nevertheless accumulate enough credits in some area to have acquired an occupational specialty. The data in table 13 showed that most members of the Class of 1980 who left postsecondary education without credentials could not be said to have earned enough credits to have acquired an occupational specialty. Among noncompleters, about 46 percent of the vocational students who entered community colleges earned fewer than 7 credits in any of the vocational areas in which they took courses. The comparable figure for public technical institutes is 25 percent.

Important exceptions among the nondegree students are the 11 percent of vocational students in community colleges and 31 percent of vocational students in public technical institutes who completed more than 18 credits in some vocational area. These students evidently earned enough credits to have accumulated a substantial concentration in some vocational specialty before leaving postsecondary education. Some of these students might have found jobs in their chosen fields and could see no reason for staying on to complete a credential. Among students entering public two-year colleges, practically no academic students who left school had completed similar amounts of course work in any academic areas.

These patterns suggest some important similarities and differences between those students who gain a degree or credential in vocational education and those students who do not. Vocational students attending community colleges seem to start out with a roughly even mix of academic and

vocational courses. Noncompleters do not appear to have taken more vocational course work, so the argument that these students enrolled to take a few employment-related courses is not supported by the evidence. Just the opposite--those who persisted to complete a degree or certificate took a somewhat higher proportion of vocational courses than those who did not complete. The same is true for students at technical colleges; those earning degrees and certificates took a larger share of vocational credits than those who left before earning a credential. Evidently, most of the academic course work is concentrated at the beginning of the program.

Probably the most important difference is that noncompleters earned very few credits, and most did not specialize in any one vocational area. Those who completed degrees or certificates, in contrast, earned many more credits--three times as many as noncompleters--and demonstrated a high degree of occupational specialization.

SUMMARY

Although the Classes of 1972 and 1980 had substantially the same overall rates of enrollment in postsecondary education (60.3 and 61.7 percent, respectively), enrollments in postsecondary vocational education at community colleges, technical institutes, and private vocational schools rose from 15 percent for the Class of 1972 to 18 percent for the Class of 1980. Students enrolling at nonbaccalaureate institutions are a broad cross section of the population. They come from high, middle, and low socioeconomic backgrounds; they have a wide range of educational aspirations; and they come from all ability groups. As a group, community colleges, public technical institutes, and private vocational schools provide postsecondary education for groups that might not otherwise have access to it.

These enrollment patterns reflect several basic characteristics of nonbaccalaureate institutions; compared with four-year institutions, they are generally more accessible to students, cost less, and have open admissions policies. Not surprisingly, students who identify themselves as having been in the vocational program in high school are more likely to enter a vocational program at the postsecondary level. Students aspiring to a baccalaureate degree are more likely to choose an academic program than students aspiring to a vocational certificate or associate degree.

Vocational courses have broad appeal, but many students take so few courses that they have little chance of acquiring depth in a particular vocational specialty. The majority of students attending community colleges take some vocational education. Those who go on to complete vocational degrees earn a significant number of credits in an occupational field, but those who leave before earning a credential seem to earn few credits in a particular specialty.

Appendix A

CLASSIFICATION OF POSTSECONDARY COURSES

The courses described in the HS&B Seniors, 1980, transcripts and NLS-72 transcripts are classified below under vocational, academic, and remedial/avocational categories.

I. VOCATIONAL COURSES

1. Agriculture
   - Agribusiness and agricultural production
   - Agricultural sciences
   - Renewable natural resources

2. Business and management
   - Business management and finance
   - Business support
   - Business and office

3. Marketing and distribution
   - Marketing and distribution
   - Insurance and risk management
   - Marketing management and research
   - Real estate
   - Small-business management

4. Health Care
   - Nursing
   - Nursing-related services
   - Other health care
   - Allied health care
   - Health sciences

5. Occupational home economics
   - Home economics
   - Vocational home economics
   - Personal services
   - Interior design

6. Trades and industry
   - Construction trades
   - Mechanics and repairers
   - Precision production
   - Transportation and material moving

7. Technical and engineering
   - Computer and information sciences
   - Business data programming
   - Business systems analysis
   - Engineering
   - Engineering technologies and other technologies
   - Engineering-related technologies
   - Science technologies
   - Communication technology

8. Education
   - Education
   - Library science

9. Public service
   - Protective services
   - Public affairs
   - Military science
   - Military technologies
   - Parks and recreation
   - Public administration
   - Law

10. Communications
    - Communications, general and other
    - Journalism
    - Radio/television news broadcast and general
    - Advertising
    - Communications research
    - Public relations

II. ACADEMIC COURSES

1. Letters
   - Literature
   - Writing
   - Speech and linguistics

2. Foreign languages
   - Spanish
   - French
   - German
   - Other languages

3. Humanities
   - History
   - Philosophy
   - Theology
   - Humanities and social sciences
   - Peace studies
   - Other humanities

4. Sciences
   - Biological and life science
   - Physics
   - Chemistry
   - Other sciences

5. Mathematics

6. Social sciences
   - Psychology
   - Economics
   - Political science
   - Sociology
   - Anthropology
   - Archeology
   - Geography
   - Public affairs
   - Ethnic studies
   - Women's studies
   - Other social science

7. Fine arts
   - Visual and performing arts
   - Architecture and environmental design

8. Liberal studies/general studies

III. REMEDIAL/AVOCATIONAL

1. Basic skills

2. Citizenship

3. Personal health

4. Interpersonal skills

5. Leisure and recreational activities

Chapter 2

STATE POLICIES IN VOCATIONAL EDUCATION

INTRODUCTION

Federal policy for vocational education delegates much of the responsibility for policy design and implementation to the states. Yet little is known about how states administer vocational education policy as expressed in federal legislation or state rules. A few analysts have described the operation of vocational offices and administrators within state education agencies, but virtually no attention has been paid to the nature and role of state vocational education policy in influencing local practice.[1]

The first section of this chapter describes how differences in implementation of federal policy by the states affect the allocation of federal funds between secondary and postsecondary education. The next section focuses on implementation of the intrastate formula for disadvantaged and handicapped set-asides and on the use of alternative policy mechanisms for the allocation of other federal funds. The chapter also examines whether recipient agencies (school districts and postsecondary institutions) are experiencing difficulties in spending federal funds available to them under the set-asides for handicapped and disadvantaged students, a problem that has been widely discussed among state officials.

The chapter then takes a brief look at state rules or standards that may help shape secondary vocational education. It describes the extent to which states mandate course hours and course sequences in vocational education and the extent to which states directly fund vocational education. The chapter considers ways in which the academic reform movement of the past few years may have affected vocational education standards. A concluding section analyzes the major survey findings.

The findings in this chapter will be augmented in future reports by research currently under way through the National Assessment. In particular, case studies of the state administration and local implementation of the Perkins Act now being completed will help to expand our understanding of state decisionmaking and its effects on local practice. The case studies will also highlight areas of state policy that are new or difficult to characterize through systematic data collection, such as the role of states in promoting innovation or serving particular clienteles. Systematic information from a survey of school districts and postsecondary institutions will amplify the findings.

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[1]The exception to this statement is the study of the state-developed formulas to allocate federal funds that was carried out by Charles Benson and E. Gareth Hoachlander as part of the 1981 national study of vocational education.

Information presented here was compiled through a one-page questionnaire administered to the directors of vocational education in the 50 states and the District of Columbia through the Fast Response Survey System (FRSS) of the National Center for Education Statistics (NCES).[2] Use of the FRSS allows the collection of information in a timely manner with little burden to respondents. Follow-up phone calls were made as necessary to obtain missing information. We are deeply appreciative that all the states responded. After the data had been collected, the information was tabulated and each state checked the accuracy of its information. A copy of the questionnaire and a brief discussion of methodology are included in a forthcoming NCES report.[3]

PROVISIONS OF THE PERKINS ACT

Set-asides

The Basic Grant (Title II), which incorporated approximately 92 percent of the funds available under the Perkins Act in fiscal 1987, apportions 57 percent of the funds as set-asides for special populations. The remaining 43 percent are targeted to program improvement. The set-asides are divided into shares for six target groups as follows:

Handicapped students	10 percent
Disadvantaged students	22 percent
Adults who need training or retraining	12 percent
Single parents or homemakers	8.5 percent
Participants in programs to eliminate sex bias and stereotyping	3.5 percent
Criminal offenders in correctional institutions	1 percent

The Perkins Act does not specify at what types of institutions (comprehensive high schools, area vocational schools, technical institutes, community colleges) or at what educational level (secondary or

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[2]The questionnaire was designed by National Assessment with Bradford Chaney and Elizabeth Farris at Westat, Inc. Helen Ashwick was the NCES Project Officer for FRSS, and Ralph Lee and Betsy Faupel were the survey managers. Bradford Chaney conducted much of the analysis of data and wrote a preliminary report on which much of this report is based. The findings reported here are based on preliminary data. A report, State Policies Concerning Vocational Education, including state-by-state responses, will be issued soon by the National Center for Education Statistics.

[3]It is extremely difficult to obtain comparable information from all states. Each state administers federal programs and defines its own authority a little differently. As a result, questions may not have the same meaning to all respondents. The questionnaire was reviewed by several state directors of vocational education and a group of outside researchers and administrators before it was administered. The survey items took into account as many of the points of state-to-state differences as could be done without jeopardizing comparability of data.

postsecondary) these funds must be spent. Nor are there such specifications for program improvement funds, although such funds must not be used to maintain ongoing programs.[4]

Intrastate Formula

In several ways, the Perkins Act changed federal policy for vocational education. First, the act established in law an intrastate formula for the allocation of approximately one-third of the Basic Grant to states--those funds set aside for handicapped and disadvantaged students.[5] The percentage of the state's grant allocated to an eligible recipient, that is, a school district or postsecondary institution, depends on the number of disadvantaged students enrolled in the district or institution (50 percent) and either the number of handicapped students or the number of disadvantaged students served in vocational education (50 percent). The formula is designed to direct resources to the places with greatest need.

The federally specified intrastate formula was enacted in response to criticisms of federal policy implementation under the 1976 Amendments to the Vocational Education Act. Critics argued that, under the 1976 Amendments, requirements for the intrastate allocation of federal funds were poorly conceived at the federal level and poorly executed at the state level. Regulations for the 1976 legislation required each state to establish a single formula for the allocation of funds under the Basic Grant. Federal criteria to be considered in drafting the formulas were confusing and potentially contradictory, and the state-developed formulas did little to further federal aims.[6]

Postsecondary Allocation

The Perkins Act also departed somewhat from previous legislation in its treatment of allocations to postsecondary education. Whereas the 1976 amendments had established a floor of 15 percent for postsecondary and adult education, the Perkins Act established a 12 percent set-aside for adults who

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[4]For a more complete summary of the Perkins Act, see "Appendix, Synopsis of Major Provisions of the Carl D. Perkins Vocational Education Act, P.L. 98-524," First Interim Report from the National Assessment of Vocational Education, U.S. Department of Education, January 1988.

[5]The one-third figure is based on an assumption that states retain the full 7 percent allowed for state administration. One-third of the remaining amount is allocated to handicapped and disadvantaged students.

[6]See The Vocational Education Study: The Final Report, U.S. Department of Education, 1981, chapter 2.

need training or retraining. The Perkins Act also created a new set-aside of 8.5 percent for single parents or homemakers. Both set-asides could be spent by all eligible recipients.

State Discretion

Although formulas and set-asides are established within the Perkins Act, states retain the authority to allocate the majority of funds between secondary and postsecondary sectors and within sectors, among eligible recipients (districts and institutions), however they wish. With the exception of the handicapped and disadvantaged set-asides, there is no requirement that funds be allocated according to population, enrollment, economic need, or other systematic criteria. States may put all the resources for adults, sex equity, single parents, corrections, and program improvement in a few places or spread them among all districts and postsecondary institutions. They may vary the places that receive funds as often as they like and in any manner they see fit. Under informal guidance from the federal Office of Vocational and Adult Education (OVAE), states have also been allowed to establish predetermined secondary and postsecondary percentages of funds governed by the intrastate formula. The formula is then applied separately for each sector and only for the percentage of funds already designated to that sector.

The only additional legal constraint that states face in allocating Perkins funds is that more than 50 percent of all funds must be spent in places that are economically depressed. Even here, however, some states have identified so much of their territory as economically depressed that the constraint has little meaning.

OVERALL BASIC GRANT ALLOCATIONS TO SECONDARY AND POSTSECONDARY EDUCATION

The wide latitude afforded to states in implementation of the Perkins Act has stimulated questions about the actual decisions of states in allocating funds. To date there has been no systematic description of the ways in which states have chosen to dispense resources. This section describes the overall mix of federal funding for secondary and postsecondary education, the mechanisms by which states have allocated the federal funds at their disposal, and the effects of different mechanisms with respect to secondary and postsecondary allocations. The questions addressed include these: Did states retain the use of formulas mandated under the 1976 Amendments, or did they substitute other methods of funds allocation? How have states implemented the federally prescribed intrastate formula for the allocation of the set-asides for handicapped and disadvantaged students? What are the current levels of allocation to secondary and postsecondary sectors of all Basic Grant funds?

To obtain comparable information, all states were requested to provide information on allocations in Perkins Basic Grant categories over a single program year, 1986-87, as defined in their

state. Although the precise months may differ (e.g., June 1 to May 31 or July 1 to June 30) all states were asked to report allocations for a 12 month period, regardless of the federal grant year from which those funds were derived. Funds may not always be expended as allocated, however, so the findings are approximate.

For purposes of this analysis, postsecondary education was not defined by type of institution but by grade level, that is, as education beyond grade 12.[7] Hence, postsecondary education could take place in many kinds of institutions: community colleges, area vocational schools, technical institutes, even adult programs of secondary school systems. Although most states consider all adult education as postsecondary, a few classify adults who have not completed 12th grade as secondary students, so accounting systems differ. These few states were unable to use our definition precisely and their responses may vary.

Overall Allocations Under the Perkins Act

On average, states allocated 42 percent of their program year 1986-87 Title II federal funds to postsecondary education (see table 1).

The 42 percent figure is larger than some previous estimates. One recent study found that 23 percent of Perkins funds were allocated to community colleges and technical institutes.[8] According to OVAE officials, the states reported that approximately 27 percent of federal funds were spent under the postsecondary/adult set-aside in the last complete year under the 1976 amendments.[9] Our data suggest, however, that the actual amount of funds spent on adults is considerably larger. In fact, because some states report all funds spent in school districts as "secondary," our data may continue to underestimate the funds for education beyond grade 12.

Behind the 42 percent average for state postsecondary allocation was a wide range of individual state behavior with respect to use of federal funds to support postsecondary and secondary education (see table 2). One state, New Mexico, indicated that it allocated all its federal funds to postsecondary education, whereas another, Mississippi, indicated only 8 percent. This discussion pertains only to

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[7]The cover letter included the following statement: "For purposes of this survey, postsecondary education refers to education beyond grade 12."

[8]T. Harry McKinney and Dale A. Davis, Distribution of Federal Funds for Vocational Education to Community, Technical and Junior Colleges, prepared for the AACJC/ACCT Keeping America Working Task Force, Washington, D.C.: American Association of Community and Junior Colleges, 1988. This report is discussed in the final section of this chapter. It is more accurate to compare the 23% figure in McKinney and Davis with the 40% of all federal funds reportedly allocated to postsecondary education in our survey.

[9]"Suggested Uses for the Vocational Education Financial Data Base," Office of Vocational and Adult Education (July 1988).

Table 2-1

Federal Vocational Basic Grant Funds Allocated
to Postsecondary Education, 1986-87
(Percentage of funds)

	Average per State	Average of All Federal Funds
All States	42%	40%
Perkins Title II categories		
Handicapped students	23	25
Disadvantaged students	30	31
Adults	72	63
Single parents/homemakers	70	62
Sex equity	46	43
Corrections	57	53
Program improvement	37	34

Source: National Center for Education Statistics, Fast Response Survey, 1988.

federal funds. Because we do not know how state funds are allocated between secondary and postsecondary levels, this discussion tells us little about a state's overall commitment to vocational training. Moreover, despite our attempt to provide a definition of "postsecondary," some of the state-to-state differences may stem from a few states' inability to use that definition. (As noted earlier, a few states have reported on institutions that serve both secondary and postsecondary students as entirely secondary or entirely postsecondary.)

Allocations by Basic Grant Categories

As can be seen in table 1, the postsecondary allocations also varied substantially across the different Basic Grant categories.[10] States were least likely to allocate funds for handicapped students to postsecondary education (on average, states allocated 23 percent of their handicapped set-aside funds to postsecondary education). Funds for disadvantaged students and for program improvement were more likely to be allocated to the secondary level (the table shows 30 percent and 37 percent to

[10]This discussion does not imply that states divide funds between secondary and postsecondary sectors a priori; it only shows the allocation results.

Table 2-2

Distribution of Federal Vocational Basic Grant Funds
to Postsecondary Education by Number of States, 1986-87

Percentage of Federal Funds	Number of States
0-10	1
11-20	7
21-30	7
31-40	10
41-50	9
51-60	5
61-70	6
71-80	1
81-90	0
91-100	2
	48

Source: See table 1.
Note: The number of states totals less than 51 because of missing information.

postsecondary, respectively). States were most likely to allocate adult and single parent/homemaker funds to postsecondary education (72 percent and 70 percent, respectively). The sex equity and corrections set-asides were split relatively evenly.[11]

Another way to report the data is to determine the average percentages of all federal funds allocated to secondary and postsecondary sectors. To do this, state responses were adjusted to reflect each state's actual share of total federal dollars.[12] Thus, nationally, 40 percent of Title II federal

[11]The amount of federal funding for corrections is very small and hard for states to categorize by the secondary/postsecondary distinction. It is spent in correctional institutions, and state-level data on participants are not kept by previous educational attainment. In every Perkins category, at least one state allocated no funds to postsecondary and at least one state allocated all its funds to postsecondary education. The most extreme case is corrections, which is hard to categorize altogether. At the other extreme, at least 90 percent of the states allocated funds at both the secondary and postsecondary levels for handicapped, sex equity, and program improvement.

[12]For this method, each state's postsecondary percentage is weighted by the amount of federal funds the state received in the 1987 federal fiscal year under the interstate formula. The weighted average of the state percentages is the percentage of all federal vocational aid nationally allocated to postsecondary education. We chose to adjust by the fiscal 1987 year because it was the most current and because previous problems in determining interstate allocations had been resolved.

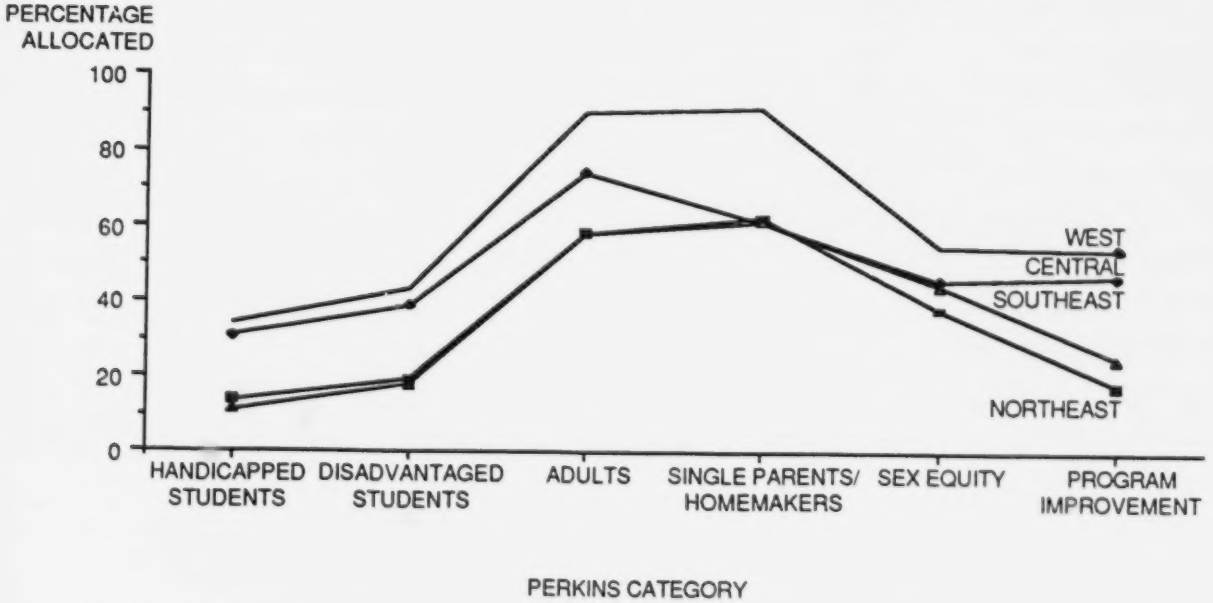
dollars were allocated to the postsecondary level (see table 1). Furthermore, states that received larger amounts of federal dollars were somewhat less likely to allocate their adult and single parent/homemaker funds at the postsecondary level, so, after adjustment, the national percentage of federal funds allocated to the postsecondary level was 63 percent for the adult set-aside and 62 percent for the single parent/homemaker set-aside. In other categories, differences between the average state's allocation behavior and the percentages of federal funds allocated were small.

Allocations by Region

Among the most striking findings in these data were the strong regional differences in allocations to secondary and postsecondary education across the special population set-asides and the program improvement category (see figure 1). In general, northeastern and southeastern states follow one pattern, while central and western states exhibit another.

FIGURE 1

Regional Allocation Of Funds For Postsecondary Education For Each Perkins Category



SOURCE: See table 1

Adjustment to reflect total federal dollars did little to alter the strong regional differences in secondary and postsecondary allocations. Western states, in the aggregate, allocated 45 percent of their federal funds under the disadvantaged set-aside to the postsecondary level. This compares with 20 percent and 25 percent of disadvantaged set-aside dollars in southeastern and northeastern states, respectively, and 32 percent in the central states. There are similar regional differences for the handicapped set-aside, although the total percentages allocated to postsecondary education in all regions are smaller. Sex equity is another area with regional differences. In the aggregate, western states allocate 55 percent of their sex equity set-aside to the postsecondary level, central states 46 percent, southeastern states 36 percent and northeastern states, 36 percent. Regional differences are less pronounced but still apparent for such subparts as the adult set-aside and program improvement.

ALLOCATIONS OF PERKINS BASIC GRANT FUNDS BY SUBPART TO SECONDARY AND POSTSECONDARY SECTORS

Because the Perkins Act gives the states greater discretion in the allocation of some funds than others, we sought to describe the actual distribution mechanisms and to determine any relationships between the mechanisms and actual allocations. The first part of this section examines the effects of the intrastate formula on secondary and postsecondary allocation of disadvantaged and handicapped set-asides. For the other two-thirds of the Basic Grant, where no allocation mechanism is federally specified, we describe the use and effects of alternative state-determined allocation methods.

Range of Allocations: Disadvantaged and Handicapped Set-asides

Despite the intrastate formula, we found substantial state-to-state variation in the amounts of funds flowing to secondary and postsecondary education for handicapped and disadvantaged students. At least one state allocated all such funds to the postsecondary level, whereas 9 states allocated little or none of their disadvantaged set-aside, and 19 states allocated little or none of their handicapped set-aside, to this level.[13] The range is shown in table 3. Allocations may vary because the numbers of disadvantaged and handicapped students at the postsecondary level relative to the secondary level vary among the states, or because different mechanisms for counting students are used, resulting in different allocations. It may also be the case, however, that decisions were made by state officials about where

[13]Because we recognized that, under federal rules, states may spend federal funds from any single federal fiscal year over a 27-month period, we asked states to provide information on the basis not of federal fiscal years but of their own. We asked states to identify their allocations of federal funds during their 1986-87 program year, whatever months that year included. Although most states indicated that they were able to provide information on this basis, many noted that allocations are only estimates. Some states appear to make a priori allocation decisions along the lines described here (secondary/postsecondary), but others do not. When states indicated that they did not make a priori decisions, we asked them to calculate the actual distribution of funds a posteriori as best they could.

Table 2-3

Distribution of Federal Funds to Postsecondary Education
Disadvantaged and Handicapped Set-Asides, 1986-87

Funds Allocated to Postsecondary Education (Percentage)	Number of States	
	Disadvantaged Students Set-aside	Handicapped Students Set-aside
0-10	9	19
11-20	9	9
21-30	11	6
31-40	8	8
41-50	7	5
51-60	2	0
61-100	4	3
	50	50

Source: See table 1.
Note: See table 2.

to apply the funds (all the Basic Grant funds or at least the funds in the two set-asides) before the intrastate formula was applied.

Extent of Preset Pools

As noted earlier, some of the states establish the percentages of disadvantaged and handicapped set-aside funds for secondary and postsecondary sectors first and then apply the intrastate formula for each sector separately. We sought to determine the extent of the practice, and whether establishing such preset amounts, termed secondary and postsecondary "pools," led to differences in secondary and postsecondary allocations.

In fact, roughly half the states (54 percent) indicated in the survey that they established the proportion of disadvantaged set-aside funds for secondary and postsecondary sectors (i.e., established

secondary and postsecondary pools) before implementing the intrastate formula (see table 4).[14] Large and midsize states (as determined by total enrollments in secondary education) were more likely

Table 2-4

Effects of Establishing Separate Secondary and Postsecondary "Pools" for Disadvantaged Set-aside, 1986-87

	Total Number of States	States with Separate Pools: Percentage of States	States with Separate Pools: Percentage of Federal Funds	States with Separate Pools: Percentage to Postsecondary Level	Other States: Percentage to Postsecondary Level
All states	50	54	60	33	24
States with secondary enrollment in grades 9-12					
Less than 100,000	15	33	37	16	28
100,000 to 250,000	19	68	66	39	22
More than 250,000	16	56	59	34	19

Source: See table 1.
Note: See table 2.

to make such decisions than small states. Approximately 60 percent of the federal funds available under the disadvantaged set-aside were allocated in states that established secondary and postsecondary pools. In contrast to other findings, regional differences were not significant.

There was a strong relationship between establishing separate pools and allocating a larger share of disadvantaged set-aside funds to postsecondary education (table 4). States that determined the share for each sector before applying the intrastate formula allocated, on average, 33 percent of their set-aside for disadvantaged students to postsecondary education, whereas all other states allocated, on average, 24 percent of their disadvantaged set-aside to the postsecondary level. As a percentage of

[14]Several state officials indicated that they create other, or additional, a priori pools; the most common was a three-way division among comprehensive high schools, area vocational schools, and postsecondary institutions.

total federal appropriations (i.e., adjusted by amount of federal funds), the states that made a prior determination allocated 36 percent of the federal funds available to the postsecondary level, as opposed to 24 percent of the funds available in the states that did not establish the pools.

We did not ask a separate question about the handicapped set-aside, but differences in handicapped set-aside allocations among states that pool or do not pool disadvantaged set-aside dollars are revealing. On average, states that established separate pools before allocating the disadvantaged set-aside are almost twice as likely to allocate their handicapped set-aside dollars to the postsecondary level. As a percentage of federal appropriations, states that pool allocated 32 percent of the federal funds available to the postsecondary level and "nonpooling" states allocated 14 percent. This finding suggests that states that establish separate pools for the disadvantaged set-aside probably do the same with the handicapped set-aside.

Although pooling made a considerable difference in the amount of disadvantaged set-aside funds (and, probably, handicapped set-aside funds) allocated to secondary and postsecondary education, it made somewhat less difference in determining the percentages of the state's total federal allocation to secondary and postsecondary education. States with more disadvantaged and handicapped set-aside funds at the postsecondary level also tended to allocate proportionately more funds to postsecondary education under the adult and single parent/homemaker set-asides, but proportionately less of their program improvement and corrections set-asides. As a result, states with prior pools spent about 40 percent of their overall Perkins funds at the postsecondary level, while other states spent about 36 percent (see table 5).

Implications of Differences in Disadvantaged and Handicapped Allocations

Congress established an intrastate formula to ensure that set-aside funds for handicapped and disadvantaged students were directed to eligible recipients in relation to economic need and to the numbers of disadvantaged and handicapped students in vocational education. Yet, overall, there appear to be sizeable differences among states in general, across regions, and between states that do and do not establish preset pools in the availability of handicapped and disadvantaged set-aside funds at secondary and postsecondary levels. The question that remains is whether these differences reflect actual differences in enrollment patterns across secondary and postsecondary sectors, differences in educational costs, or other factors. Can we conclude that enrollments at the postsecondary level, or the costs of educating disadvantaged or handicapped students, are twice as great in some states as in others? If not, are there substantial differences in "per student" amounts of funding across the states?

Table 2-5

Effects of Pooling on Basic Grant Funds
Allocated to Postsecondary Education, 1986-87
(Weighted percentage of funds)

	Handicapped Set-aside	Disadvantaged Set-aside	Total Basic Grant
States that pool	32%	36%	40%
States that do not pool	14	24	36

Source: See table 1.

Allocation Methods: Adults, Single Parents, Sex Equity, Corrections, and Program Improvement.

Aside from the intrastate formula, states have great latitude in the allocation of Perkins funds. The only constraint is that states must ensure that more than 50 percent of all funds are spent in economically depressed areas. Previous legislation had required each state to establish an intrastate formula that included federally specified criteria for the allocation of Basic Grant funds, but the Perkins Act left these decisions entirely to the states. We sought to determine the extent to which states took advantage of legislative change. Did they continue to rely on formulas, or did they move to competitions or other discretionary means to allocate the rest of the Basic Grant funds? We also sought to determine whether allocations to secondary or postsecondary sectors varied with the mechanism used.

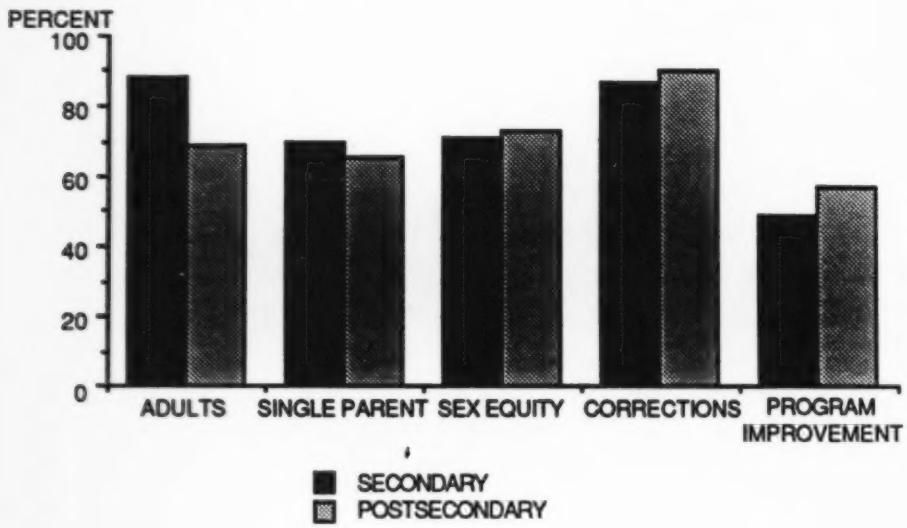
Different allocation mechanisms have implications for state policy and local practice. Competitions and other discretionary mechanisms may give states greater opportunity to establish and enforce priorities in the allocation of federal funds. But state discretion may mean that localities are less likely to understand the allocation process and be able to predict and plan for their share of federal resources from year to year than would be the case under a formula. Data from this survey will be examined in relation to case studies and a survey of eligible recipients conducted by the National Assessment to observe the actual effects of alternative mechanisms. The next section describes the extent to which alternative policy mechanisms are used and their effects on secondary and postsecondary allocations.

Range of Allocation Methods

Typically, states used only one of the three methods (formula, competition, other discretion) to allocate all the funds in a single Perkins category at both the secondary and postsecondary levels (figure 2). At least two-thirds of the states used only one method to allocate funds for adults, single parents, sex equity, and corrections at either the secondary or postsecondary level. Only in the area of program improvement were multiple methods used in a majority of states. In this case, 51 percent of states at the secondary level and 43 percent of states at the postsecondary level used more than one method. This finding suggests that states may be dividing the program improvement pot into several subparts and establishing priorities for some of the subparts.

FIGURE 2

Percentage Of States Using One Funding Method, By Perkins Category And Educational Level



SOURCE: See table 1.

When combined, competition and other discretionary means were the most common methods for awarding funds at the secondary and postsecondary levels for all Perkins categories not covered by the intrastate formulas (see figures 3 and 4). The formula method was used more frequently at the postsecondary than the secondary level, but is the most common means for the distribution of funds in only one category at the postsecondary level--the adult set-aside. Even here, however, formula was the

FIGURE 3

Most Common Funding Method Chosen By States To Distribute Perkins Funds

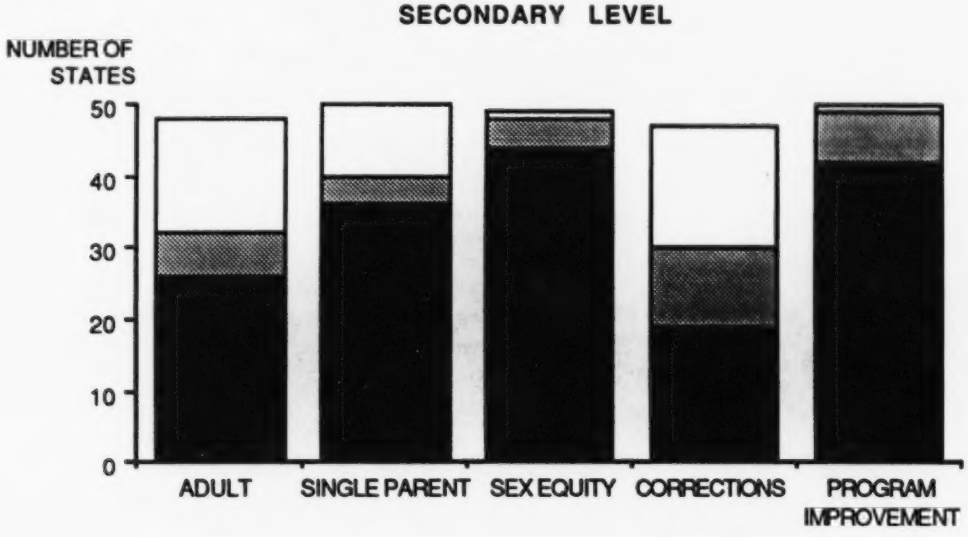
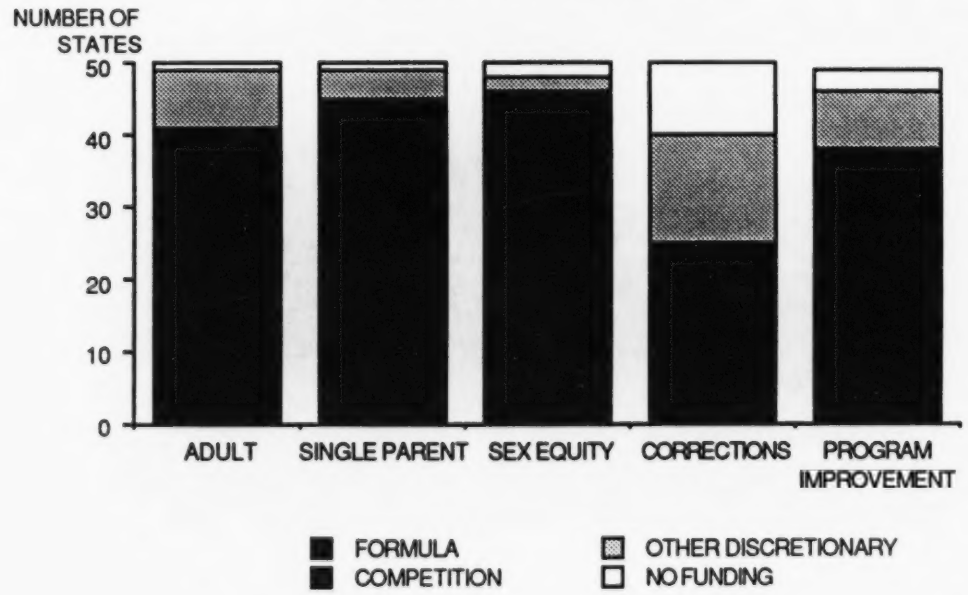


FIGURE 4



SOURCE: See table 1

NOTE: The total number of states does not add to 50 because of state non response.

most common method in less than half the states. The formula method was used to allocate program improvement funds at the secondary level in 30 percent of the states and at the postsecondary level in 30 percent of the states. Funds for some categories and educational levels, such as the single parents/homemakers and sex equity set-asides at the secondary level, were almost never allocated by formula.

There were regional differences in state allocation behavior (see table 6). States in the western and central regions used competition more commonly as the method to allocate funds in almost every

Table 1-6

Regional and Set-aside Differences in Use of Formulas as the Most Common Allocation Mechanism (Percentage of States)

	Adults	Single Parents	Sex Equity	Program Improvement
Secondary level				
Northeast	40%	9%	8%	42%
Central	0	0	9	9
Southeast	63	10	17	58
West	0	0	0	43
Postsecondary level				
Northeast	27	25	18	18
Central	55	10	18	36
Southeast	58	25	17	33
West	40	27	21	33

Source: See table 1.

Perkins category, particularly at the secondary level. In the most extreme case, no central or western state indicated that it used formula as the most common means to allocate adult or single parent funds at the secondary level. In contrast, a majority of states in the Southeast used formula most commonly as the method to allocate funds for the adult set-aside and for program improvement. States that have increased their graduation requirements substantially over the past few years were also unlikely to use

formulas (see NCES report mentioned in footnote 2 for details).

No systematic differences in percentages of funds to secondary and postsecondary sectors were observed between states using different allocation methods. States using competition most heavily were somewhat more likely than those using formulas to allocate funds for adults, single parents, and sex equity to the postsecondary level, but the differences are not great. There was little difference in allocations for program improvement to secondary and postsecondary levels based on allocation mechanism. Larger states were more likely to use formulas and to spread resources in each Perkins category across both educational levels--a practice that contributed to the lack of significant differences.

Although competition was used most commonly by most states, it was not necessarily used to distribute the most funds (see table 7). States with larger Perkins allocations were less likely to use competition as their primary allocation method; they relied more often on formulas. The exact amount of funds allocated through each mechanism is unknown, but it is possible to construct rough estimates.[15] According to these estimates it appears that, in some categories, the percentage of funds distributed by formula considerably exceeded the percentage of states using formulas as the most common funds distribution mechanism. The categories for which the formula method appeared to account for the allocation of a majority of funds overall included program improvement funds at the secondary level and the adult set-aside funds at the postsecondary level.

Other State Constraints on Federal Funds

In a preliminary set of case studies, the National Assessment identified states that imposed additional constraints of their own on the uses of federal funds. To determine how widespread the constraints were, respondents were asked to identify dollar or time constraints they added in allocating federal funds (see table 8). Few states indicated that they placed these additional constraints on federal funds. Only 12 states indicated that they applied any dollar "caps" in any category (e.g., sex equity funds at the postsecondary level). The most common categories for which caps were applied were sex equity funds at the secondary level (nine states, median cap of $11,000) and single parents or homemakers at the secondary level (eight states, median cap of $25,000). Thirty three states indicated time constraints in one or more categories, but it was not clear whether the constraints were entirely state imposed or a reflection of federal rules.[16]

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[15]We can make the estimates because we know that it was common for states to use only one allocation method and we know the actual allocations by Perkins category in each state at secondary and postsecondary levels.

[16]Some states reported one year limits on funding to eligible recipients that may simply be yearly application requirements. In other cases states reported a three year limit on program improvement funds, which is a federal requirement. (See NCES report cited in note 2 for details).

Table 2-7

Most Common Allocation Mechanism and State Allocation of Perkins Funds to Secondary and Postsecondary Education, 1986-87 (Percentage)

Allocation Mechanism[a]	Adults		Single Parents		Sex Equity		Corrections		Program Improvement	
	Funds	States	Funds	States	Funds	States	Funds	States	Funds	States
Secondary level										
Formula	38%	28%	25%	5%	25%	8%	2%	10%	55%	30%
Competition	47	53	56	85	59	83	35	53	27	47
Postsecondary level										
Formula	74	45	41	22	32	19	26	18	40	30
Competition	19	39	54	69	66	77	34	45	43	52

Source: See table 1.
[a]Other discretionary means are excluded, so percentages do not add to 100. These data are for states that allocate funds to a category at the secondary or postsecondary level. See figures 3 and 4 for number of states that do not allocate to a level.

SPENDING FEDERAL FUNDS: DISADVANTAGED AND HANDICAPPED SET-ASIDES

Vocational education administrators at state and local levels have expressed concern that eligible recipients (school districts and postsecondary institutions) are experiencing difficulties in using Perkins funds. The reasons are complex but involve a combination of changes in allocation brought about through the intrastate formula, the need to justify expenditures as excess costs, and the difficulties inherent in matching federal resources (especially in those cases where states do not provide the matching funds and localities must do so). To try to determine the extent of the problem, states were asked to identify the total number of eligible recipients (secondary and postsecondary) for handicapped and disadvantaged set-asides, the number that actually received grants, the number that did not spend the full allocations, and the percentage of the state's allocation to localities that was unspent in a 12-

Table 2-8

States with Maximum Limits on Single Grants
1986-87

Perkins Category	Secondary		Postsecondary	
	Number of States	Median Limit	Number of States	Median Limit
Adults	2	$70,000	1	$22,410
Single parents/homemakers	8	25,000	6	37,500
Sex equity	9	11,000	6	20,500
Corrections	0	--	2	31,205
Program improvement	3	20,000	2	41,500

Source: See table 1.

month period.[17] Several states indicated that they did not keep records on theses items, so they provided estimates.

Nationally, approximately 68 percent of eligible recipients received grants under the handicapped set-aside in program year 1986-87 (see table 9). There were some regional differences, with states in the Southeast indicating that considerably more of their potential recipients received grants. Small states (defined in terms of total secondary enrollments) awarded funds to a smaller percentage of eligible recipients than medium-size or larger states.

About a third of those eligible recipients receiving grants under the handicapped set-aside did not spend their full allocation. On average, 13 percent of the federal dollars allocated were not spent, varying from 18 percent in the central region to 9 percent in the western region. There was not much regional or other variation here, although the rate was somewhat higher in states with lower per pupil expenditures for elementary/secondary education. In discussion, many respondents emphasized that for the bulk of recipients any unspent amounts were generally quite small. If that observation is correct, it suggests that unspent funds may be limited to some larger districts.

[17]The count of eligible recipients may be somewhat low, because some states make grants to consortia of eligible recipients rather than individual school districts or postsecondary institutions. In those cases, states were asked to estimate the number of districts or institutions included in all arrangements rather than to report the number of grants. Some states indicated that they do not keep data that would allow them to answer this question completely, so they provided overall estimates. While states have 27 months to spend funds from a single federal fiscal year, it is common for states to grant districts and postsecondary institutions a year to spend funds (possibly from multiple federal fiscal years). States then reallocate unspent funds.

Table 2-9

Percentage of Eligible Recipients Unable to Spend
All Funds Under the Intrastate Formula, 1986-87
(Percentage of recipients)

	Eligible Recipients That Received Funds	Recipients Unable to Spend All Funds Received	Percentage of Funds Unspent
Handicapped set-aside	68%	34%	13%
Northeast	67	34	11
Central	60	37	18
Southeast	92	29	15
West	57	35	9
Disadvantaged set-aside	70%	36%	17%
Northeast	68	47	20
Central	59	36	25
Southeast	92	34	16
West	61	33	9

Source: See table 1.

The problem of unspent funds seems somewhat greater with respect to the disadvantaged set-aside.[18] The percentages of districts that received grants and returned some funds are similar to those for the handicapped set-aside--70 percent nationally received funds, with similar regional variations; 36 percent did not spend all their allocations. The percentage of funds unspent was 17 percent, somewhat higher than the 13 percent for the handicapped set-aside. There appeared to be no systematic relationship between spending difficulty and per-pupil expenditures. As was the case with the handicapped set-aside, the percentage of eligible recipients with unspent funds was greatest in the central states, where one-quarter of the funds went unspent, and least in the western states (which also made awards to fewer of the eligible recipients). Again, discussion with respondents indicates that

[18]See previous notes for caveats to this discussion.

unspent funds may be concentrated in a few districts. This issue is being examined in greater detail through case studies of Perkins Act implementation in communities, as well as through a survey of eligible recipients.

An unexpected finding from this analysis was that the percentages of eligible recipients receiving grants under both set-asides varied considerably across the nation. Although roughly two-thirds of eligible recipients in the northeastern, central and western states received grants, almost all eligible recipients in the Southeast received grants. The reasons for this disparity remain unclear. One possible explanation is that handicapped and disadvantaged students are more likely to be concentrated in particular school districts or postsecondary institutions in areas outside the Southeast (or that very small districts--likely to reject small awards--may be more common outside the Southeast). Given the earlier description about the considerable variation in the allocations of these funds to secondary and postsecondary sectors across states, however, this explanation seems unlikely. Another explanation is that eligible recipients entitled to small amounts of funds are likely to reject the grants, but that small districts and institutions in the Southeast are less willing to forgo even small grants. Clearly, more information is needed to explain the apparent differences.

STATE FUNDING FOR SECONDARY VOCATIONAL EDUCATION

States exercise authority for vocational education beyond that established through federal law. Little is known about the extent and nature of state authority in financing and regulatory matters beyond the criteria states establish for vocational teacher certification. This section examines briefly the extent of state funding for vocational education at the secondary level and discusses some of the ways in which states regulate vocational education. Information from the state survey is augmented by state education finance information collected by the American Education Finance Association (AEFA).[19] Unfortunately, we are not able to provide comparable information for postsecondary vocational education.

Despite much concern about the small amount of federal support of vocational education in relation to the size of state and local support, there has been little detailed information available on the nature and extent of the direct state contribution to vocational education. Gaining information on this topic is important not only to determine the size of the state contribution, but also to understand the ways in which states help shape vocational education practice.

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[19]Richard Salmon, ed., Public School Finance Programs of the United States and Canada, American Education Finance Association, 1988 (information presented here drawn from the state-by-state compilation).

According to the survey, almost all states (90 percent) provided some separate or additional financial aid to school districts or other vocational districts for secondary vocational education (see table 10). The most common type of state aid was categorical; 80 percent of the states indicated that they have some sort of categorical aid earmarked for vocational education, and 38 percent have categorical aid aimed directly at matching federal dollars. States in the Southeast appear to be most likely to have categorical programs aimed directly at matching federal dollars. States with high per-pupil expenditures for elementary/secondary education were less likely to have this form of state aid.

A substantial number of states provided additional resources for vocational education on a per-student or per-enrollment basis. According to the survey, more than one-third of the states (38 percent) provided supplementary funds for secondary students enrolled in vocational education. The rates were higher in the Northeast and Southeast (55 percent in each region). No state in the central region indicated that it provides supplementary funds on a per-student basis.

The per-student vocational funds supplement may be expressed as a weight in the general state aid formula or as a reimbursement to districts for vocational students. In general, larger states are more likely to have a per-student aid approach (47 percent compared with 29 percent for small states). The additional aid for vocational students ranged from 1 percent in Utah to 100 percent in Massachusetts compared to state aid for non vocational students. This variation suggests that the definition of "vocational student" or "vocational enrollment" may differ considerably across states, with some states reimbursing districts for any vocational enrollment and others (especially those with high nominal reimbursement rates) reimbursing districts only for those students enrolled in a multicourse sequence or multihour program.

The differences in the definition of vocational student were underscored by data in the AEFA state-by-state description of education finance programs. According to the AEFA data, almost half the states (24) provided some form of weight in the state formula (basic aid or targeted aid) for vocational students. This figure is considerably higher than the survey findings. Weightings may apply to all students enrolled in vocational education or only to those enrolled in particular programs or institutions. In addition, many of the states for which no specific weighting scheme was indicated in the AEFA report provided substantial grants for particular institutions (such as regional occupational centers or area vocational schools) or vocational education "funds" that may, in fact, provide reimbursement on per-student or percentage-of-cost bases.

The total amount of state funding for vocational education is quite large. For the 38 states for which some, albeit incomplete, dollar amounts are available in the AEFA report, specific state funding for vocational education exceeded $1.6 billion. This figure does not include the costs of vocational weighting factors for state aid in most of those states, which would increase the figure substantially. In the few cases where such information is provided, we have a glimpse at the magnitude of the state

Table 2-10

Characteristics of States That Provide Separate or Additional Financial Support to Secondary School Districts or Vocational Districts for Vocational Education
1986-87
(Percentage of states)

State Characteristic	Any State Aid	Per-Student Aid	Matching Funds	Other State Aid
Total	90%	38%	38%	80%
Region				
Northeast	100	55	27	91
Central	83	0	20	90
Southeast	92	55	64	73
West	87	38	38	69
Secondary enrollment				
Less than 100,000	93	29	43	79
100,001 to 250,000	84	38	38	75
250,001 or more	94	47	33	87
Per-pupil expenditures				
Less than $2,000	94	47	47	80
$2,000 to $3,000	88	24	38	76
$4,000 or more	90	56	22	89

Source: See table 1.

contribution. For example, the AEFA report estimated that, in Kentucky, vocational "units" in the state weighting scheme accounted for $72 million in state aid annually; in South Carolina the estimate was that vocational weighting resulted in approximately $109 million in state aid. These are substantial state contributions, and much more information is needed to understand the extent of that contribution on a national basis.

SECONDARY VOCATIONAL EDUCATION STANDARDS

In order to further describe the state role in vocational education policy-making, we sought to identify ways in which states shape the mix of courses and programs at the secondary level. In particular, states were asked whether they establish minimum hours of instruction or minimum

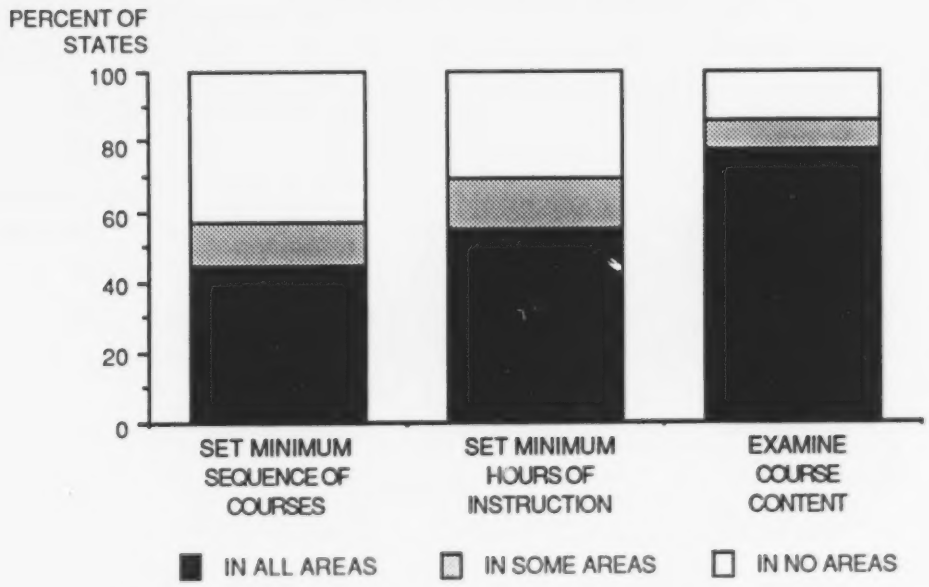
sequences of courses for completing secondary occupational training programs at present, and whether those requirements have changed in the past five years. States were also asked whether they review the content of courses in occupational training programs as a mechanism for quality control.

Hours and Course Sequences

More than half the states (55 percent) have established minimum hours of instruction for completing an occupational training programs in all subject areas included in the survey (see figure 5).[20] An additional 14 percent have established minimum hours for instruction in some occupational areas.

FIGURE 5

Percent Of States That Establish Policy In Occupational Areas



SOURCE: See table 1

A third of the states set no such standards. Standard setting for minimum hours is considerably more common in the northeastern and southeastern states than in the central and western states (table 11).

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[20]The occupational subject areas included in the survey were agriculture education, distributive/marketing education, business education, trade and industrial education, health education and occupational home economics. Respondents were asked to answer the question for the largest enrollment major in each occupational area.

Table 2-11: Characteristics of States Setting Manimum Hours, Setting Minimum Squences of Courses, and Examining Course Content for Secondary Vocational Education, 1988
(Percentage of states)

State Characteristics	Set Minimum Hours			Set Minimum Sequence			Examine Course Content		
	In all 6 areas	In 1-5 areas	In no areas	In all 6 areas	In 1-5 areas	In no areas	In all 6 areas	In 1-5 areas	In no areas
Total	55%	14%	31%	45%	12%	43%	78%	8%	14%
Region									
Northeast	67	25	8	50	8	42	67	17	17
Central	42	8	50	33	17	50	67	8	25
Southeast	75	0	25	67	8	25	92	8	0
West	40	20	40	33	13	53	87	0	13
Number of units added[a]									
Up to 1	55	9	36	36	9	55	73	18	9
2 to 3 units	53	6	41	47	6	47	94	0	6
More than 3	69	15	15	62	15	23	77	0	23
Not classifiable	40	30	30	30	20	50	60	20	20
1Total units required for graduation[b]									
Less than 20	63	19	19	31	19	50	75	13	13
20 units	57	14	29	57	14	29	86	0	14
More than 20	47	5	47	53	5	42	79	5	16
Secondary enrollment									
Less than 100,000	56	19	25	44	13	44	75	6	19
100,001 to 250,000	68	13	26	53	11	37	95	0	5
250,001 or more	38	19	44	38	13	50	63	19	19
Per pupil expenditures									
Less than $3,000	63	6	31	69	0	31	94	6	0
$3,000-3,999	50	13	38	29	21	50	79	4	17
$4,000 or more	55	27	18	45	9	45	55	18	27

Source: See table 1.
[a]Thirteen states could not be classified because of a lack of information on state requirements or recommendations for 1980 or 1987.
[b]Two states were excluded because unit requirements for graduation are not set at the state level.

It is less common in states with the largest secondary enrollments. It is also less common in states with the highest total unit requirements for graduation; this suggests that it may be harder to mandate minimum hours in cases where vocational education may be in greater competition for the limited number of hours in a student's school day.

A smaller percentage of states set minimum sequences of courses for completion of an occupational program in all the occupational areas included in the survey (45 percent). An additional 12 percent of states set such standards in some of the occupational areas included in the survey. In almost every occupational area, a little more than half the states set course sequence standards. Again, standard setting was more common in the Northeast and Southeast, but there were no systematic differences by size of state. States that greatly increased unit requirements in the past few years were also more likely to mandate course sequences in vocational education, but there was no systematic relationship between sequence standards and total units for graduation, perhaps because sequence requirements affect only those students who are enrolled in systematic, multicourse vocational programs.

Almost all the states indicated that they review the content of vocational courses. In each occupational area at least 80 percent of the states indicated that they reviewed course content. Review was most common in the Southeast (100 percent) and least likely in the central states, but even here it occurred in some occupational areas at least 75 percent of the time. It was less likely in states with the highest per-pupil education expenditures (only 50 percent of those states indicated review of course content).

In general, we wanted to establish whether some states administer vocational education more actively than others. We hypothesized that states that set course or hour requirements would also be likely to intervene actively in the administration of federal funds. In fact, we found that states that established maximum numbers of years for support of programs with federal dollars were also more likely to set minimum hours for completing occupational programs. (see table 12). Although the relationship was weaker, these states were somewhat more likely to examine course content.

Effects of Academic Reform on Vocational Standard Setting

Claims and direct evidence about the effects of academic reforms on vocational education led us to inquire about changes in secondary vocational education standards over the past few years. We sought to determine whether increases in graduation requirements had led to changes in state standards for hours or course sequences in vocational education. Vocational educators have expressed concern that increased core requirements are limiting the amount of time available for enrollment in vocational "programs," that is, sequences of courses that prepare for specific careers. We sought to determine whether states have made changes in vocational requirements that might make it easier to complete a vocational program by reducing the units or limiting the sequence of required courses.

Table 2-12

Relationship Between "Caps" on Years of Federal Support and State Standards on Vocational Curriculum

	State Sets Maximum Number of Years for Receipt of Federal Funds	
	Yes	No
States that establish minimum hours of instruction	64%	39%
States that review course content	82	72

Source: See table 1.

To investigate this issue, states were asked whether, between 1983-84 and 1987-88, the state-prescribed minimum hours or sequence of courses had increased, decreased, or remained the same. The responses were matched with the state's total units for graduation as well as the state's degree of change in graduation requirements over the past few years (see table 13).

In general, there was little shifting of standards for hours of vocational instruction or sequence of courses in occupational areas between 1983-84 and 1987-88. Among the states that had such standards, there was a slight tendency to increase overall requirements for hours of instruction. There was a somewhat greater tendency to increase standards in states that required the largest number of units overall for graduation (see NCES report mentioned in footnote 2 for detailed tables). In the largest states, however, there was some tendency to decrease standards in trades and industries and business education, the areas in which the greatest numbers of students were enrolled. The number of observations is very small, however (see NCES report).

Overall, there was a slight trend in the direction of increasing the sequence of courses needed to complete an occupational program. This trend was most pronounced in states that increased their graduation requirements the most during the past few years (see NCES report). This trend suggests that increases in standards in this area may have been part of the reform movement, or that increases may have been an effort to try to ensure that students faced with competing demands on their time would continue to take multicourse vocational sequences, rather than individual classes. In neither case (hours or course sequences) is there much evidence that state officials responded to academic reforms in secondary education by decreasing the time demands of vocational education. None of these

Table 2-13

Change in States Standards for Hours of Instruction and Sequence of Courses in Secondary Schools, 1983-84 to 1987-88
(Percentage of states)

	Increased Standards		No Change		Decreased Standards	
	Hours	Sequence	Hours	Sequence	Hours	Sequence
Agriculture	16%	24%	71%	68%	13%	8%
Distributive/marketing	11	16	78	76	11	8
Business	15	21	70	71	15	8
Trades and industry	19	25	65	63	16	13
Health	17	17	73	83	10	0
Occupational home economics	10	17	76	75	14	8

Source: See table 1.

findings precludes the possibility of changes in requirements or student participation at the local level, however. We will examine these issues in future National Assessment reports.

ANALYSIS OF THE SURVEY FINDINGS

Several of the survey findings stand out. The first is the significant regional variation in state vocational education policies. Central and western states were more likely to spend federal funds in postsecondary education, to allocate them by discretionary means rather than formulas, and to direct handicapped and disadvantaged set-asides to a smaller percentage of potential eligible recipients. Central and western states were less likely to have per-student reimbursement for secondary vocational education and to set minimum hours or course sequences for vocational course taking at the secondary level. The findings about federal funds suggest that postsecondary authorities may exert greater influence on federal vocational education resources in the central and western states.

Because all the cases in which an entity other than the state board of education administers the Perkins funds occur in central and western states, it is also possible that regional differences in the findings mask administrative differences. To test this assumption, states were divided into groups

according to whether Perkins funds are administered by the state board of (elementary/secondary) education or whether the act is administered by another authority (often a combined secondary/postsecondary authority).[21] A regression analysis was conducted to determine whether Perkins authority alone explained a significant portion of the variation. The analysis did not indicate an independent effect of administrative authority. In other words, states in the central and western regions did not differ systematically with respect to postsecondary support with Perkins funds on the basis of the authority responsible for administering the Perkins Act.

A second important finding is that forty percent of federal dollars are allocated to postsecondary education. That percentage appears to be higher than those in a recent study by T. Harry McKinney and Dale A. Davis, who found that approximately 23 percent of Perkins Title II federal funds were allocated to community and technical colleges during 1985-86.[22] They also found little change in the percentage of funds to two-year institutions between 1983 and 1986. Our results are for 1986-87. The differences between the results of the two studies (around 17 percent) are likely to be the percentages of Perkins funds allocated to postsecondary education other than that conducted in two-year colleges--that is, to the education of adults enrolled in secondary school districts, technical institutes that do not grant two-year degrees, and secondary or postsecondary area vocational schools.[23]

Finally, variation in the rates at which states allocate handicapped and disadvantaged set-asides to the postsecondary level suggests that a variety of state-level policies influence the expenditure of federal funds. Judging by the substantial variation in rates of Perkins funding to secondary and postsecondary levels, states appear to have made overall decisions about the division of federal funds between secondary and postsecondary education (or on an institutional basis among school districts, area vocational facilities, and community colleges). A majority of states also established preset "pools" of funds before allocating the disadvantaged set-aside. Overall, the states with preset "pools" spent greater amounts of handicapped and disadvantaged funds at the postsecondary level but showed less difference in overall secondary and postsecondary spending. In other words, the determination of the location of intrastate formula funds appeared to be substantially affected by pooling, but the allocation

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[21]We classified the states using schemes developed by Woodruff (1978), Gentry (1979) and Faddis (1986) and summarized by John E. S. Lawrence in "Policy Issues in the Governance of Vocational Education," Design Papers for the National Assessment of Vocational Education, U.S. Department of Education, February 1987 pp. IV-2 - IV-27.

[22]See McKinney and Davis, Distribution of Federal Funds.

[23]Some of these resources may be used to support less than baccalaureate programs at four-year institutions, but this seems doubtful. It should also be noted that the McKinney and Davis study excluded a subset of technical institutes, particularly those that did not grant an A.A. or A.S. degree.

of formula funds did little to redirect overall Perkins Act dollars between secondary and postsecondary sectors. Its net effect in redirecting total federal spending to one sector or the other was small.[24]

The considerable variation in the allocation of funds under the intrastate formula also raises questions about the willingness of some states to implement federal priorities. Concern that states were not directing federal resources to areas of greater educational and economic need led to the development of the federally specified intrastate formula. Yet a majority of states determined whether these funds went to secondary or postsecondary education without regard to the formula. This practice may make it difficult to ensure that, within a state, handicapped and disadvantaged allocations are based entirely on need. Unless the decisions are based on enrollments and costs, the practice may also make it hard to ensure that per-student amounts of assistance would be roughly the same at the secondary and postsecondary levels. Findings from the survey of local districts and postsecondary institutions will be critical to determining the effects, if any, of these allocations practices on the types and amounts of assistance available.

[24]What is currently unknown, however, is the relationship between formula dollars spent at each level and enrollments, both aggregate and special population. That issue will be addressed by comparison of state survey data with enrollment data from longitudinal student surveys, and by analysis of the local survey, which will allow comparison of actual grants and overall enrollment figures.